

11. Determine the exact value of $\cos(30^\circ)$

A. $\sqrt{3}$

B. 1

C. $\frac{\sqrt{3}}{2}$

D. $\frac{1}{\sqrt{3}}$

12. Given that $\sin x = -\frac{\sqrt{3}}{2}$, determine the exact value of x , if $0 \leq x < 360^\circ$.

A. $150^\circ, 330^\circ$

B. $210^\circ, 330^\circ$

C. $240^\circ, 300^\circ$

D. $210^\circ, 300^\circ$

13. If the point $(-3, 2)$ is on the terminal arm of a standard position angle θ , then determine the exact value of $\sin \theta$.

A. $\frac{2}{\sqrt{13}}$

B. $\frac{-3}{\sqrt{13}}$

C. $\frac{2}{\sqrt{5}}$

D. $\frac{-3}{\sqrt{5}}$

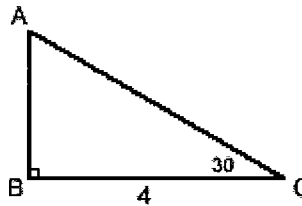
14. Determine the exact value of the side AC in the given triangle.

A. 8

B. $\frac{8}{\sqrt{3}}$

C. $\frac{4}{\sqrt{3}}$

D. $\frac{\sqrt{3}}{2}$



15. If $\sin x = \frac{1}{3}$ and $\tan x < 0$, then determine the exact value of $\tan x$.

A. $-\frac{1}{\sqrt{8}}$

B. $-\sqrt{8}$

C. $-\frac{\sqrt{8}}{3}$

D. $-\frac{3}{\sqrt{8}}$

16. Solve $2x^2 - x = 6$

A. $x = -\frac{3}{2}, 2$

B. $x = -2, \frac{3}{2}$

C. $x = \frac{3}{2}, 2$

D. $x = -2, -\frac{3}{2}$

17. Solve $|x-2|=5$

A. $x=7$

B. $x=-3, 7$

C. $x=-7, 3$

D. $x=3, 7$

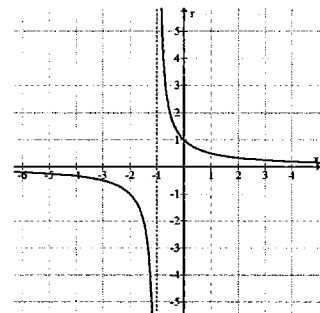
18. Determine the equation of the function graphed on the right.

A. $y = \frac{1}{x}$

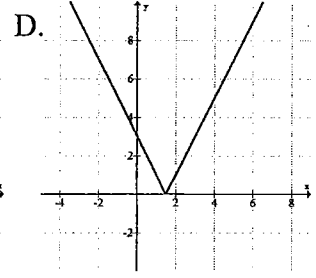
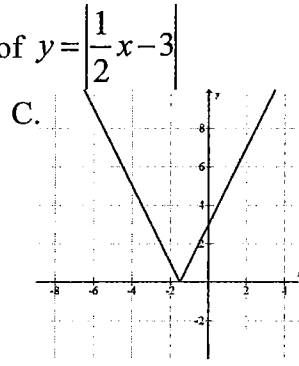
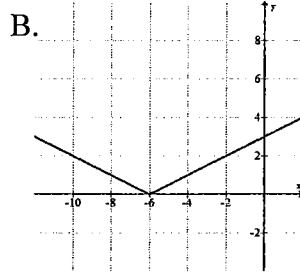
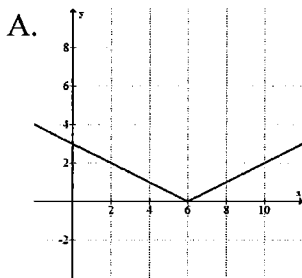
B. $y = \frac{1}{x-1}$

C. $y = \frac{1}{x+1}$

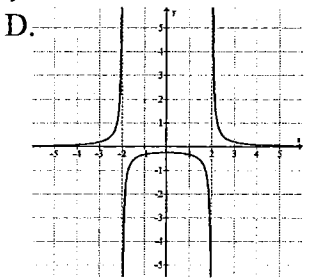
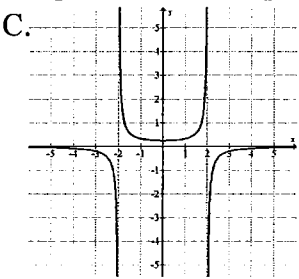
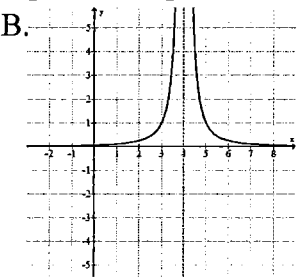
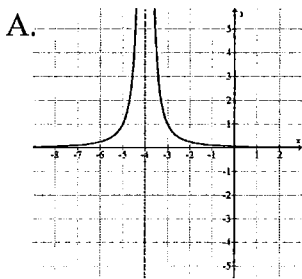
D. $y = \frac{1}{\frac{1}{2}x+1}$



19. Which of the following best represents the graph of $y = \left| \frac{1}{2}x - 3 \right|$



20. Which of the following graphs best represents the reciprocal of the graph $y = x^2 - 4$



Part B: Calculator Section

- Determine the first term in the geometric sequence: $____, -20, 80$
 A. 5 B. -4 C. -120 D. 4
- Determine the common difference of the arithmetic sequence $-2.4, -0.3, 1.8, \dots$
 A. -2.7 B. -2.1 C. 2.1 D. 2.7
- Determine the 10th term of the arithmetic series $6 + 7.2 + 8.4 + \dots$
 A. 16.8 B. 18 C. 30.96 D. 114
- Determine the partial sum S_{12} for the arithmetic series $-12 - 9 - 6 - \dots$
 A. 21 B. -342 C. 72 D. 54
- If three consecutive terms in an arithmetic sequence are given by $4, k, 10$, then determine k .
 A. 1.25 B. 3 C. 7 D. 6
- Find the sum of the infinite geometric series $-45 + 30 - 20 \dots$
 A. -135 B. -35 C. -27 D. *no finite sum*
- In a geometric sequence $t_2 = 10$ and $t_3 = 4$, determine t_4 .
 A. 0.4 B. 1.6 C. 0.64 D. 25
- Determine the 9th term in the geometric sequence $-16, -24, -36 \dots$
 A. -615.09 B. -410.06 C. -922.64 D. -0.62

9. The series $3+9+27+\dots$ could be classified as
 A. Geometric (convergent) B. Geometric (divergent)
 C. Arithmetic D. None of these
10. Determine the sum of the first 14 terms of the geometric series $-1 + 2 - 4 + \dots$
 A. 8192 B. -2731 C. 8191 D. 5461
11. If the sum of an infinite geometric series is 27, and the common ratio is $\frac{1}{3}$, determine the first term.
 A. 18 B. 40.5 C. 81 D. 9
12. Determine the number of terms in the series $\sum_{j=3}^{12} j^2$
 A. 10 B. 11 C. 12 D. 13
13. How many terms are in the geometric sequence 2, 6, 18, ..., 13122?
 A. 7 B. 8 C. 9 D. 10
14. What is the partial sum S_{11} of this geometric series $3 + 6 + 12 \dots$ if $t_{11} = 3072$?
 A. 6141 B. 3069 C. no finite sum D. 1533
15. Evaluate $\sum_{k=1}^8 3k - 7$
 A. 52 B. 35 C. -229 D. 72

Use the quadratic function $y = -3(x + 4)^2 + 5$ for the following 4 questions.

16. Determine the equation of the axis of symmetry of the parabola.
 A. $x = 4$ B. $x = -4$ C. $y = 5$ D. $y = -5$
17. Determine the coordinates of the vertex of the parabola.
 A. $(-4, 5)$ B. $(4, 5)$ C. $(-4, -5)$ D. $(4, -5)$
18. Determine the range of the graph.
 A. $-5 \leq y$ B. $y \leq -5$ C. $5 \leq y$ D. $y \leq 5$
19. Determine the domain of the above function.
 A. $4 \leq x$ B. $x \leq 4$ C. $x \leq -4$ D. $x \in \mathcal{R}$

20. Determine the coordinates of the vertex of the parabola $y = x^2 + 6x + 2$

- A. $(-3, -7)$ B. $(-3, 7)$ C. $(3, -7)$ D. $(3, 7)$

Use the graph of the parabola on the right to answer the following 3 questions, given the equation $y = a(x - p)^2 + q$

21. Determine the value of q .

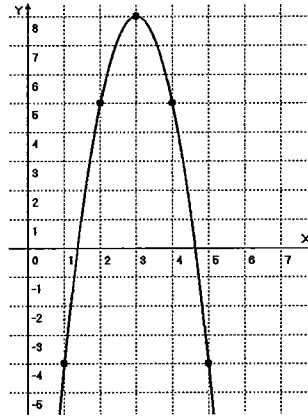
- A. 4 B. -4 C. 8 D. -8

22. Determine the value of a .

- A. -5 B. 5 C. -3 D. 3

23. Determine the y -intercept of the graph.

- A. $y = -9$ B. $y = -19$ C. $y = -27$ D. $y = -35$



24. Convert the general form equation $y = x^2 + 6x + 4$ to standard form.

- A. $y = (x + 3)^2 + 4$ B. $y = (x - 3)^2 + 4$ C. $y = (x - 3)^2 - 5$ D. $y = (x + 3)^2 - 5$

25. Convert the general form equation $y = -2x^2 + 8x - 7$ to standard form.

- A. $y = -2(x - 2)^2 + 1$ B. $y = -2(x - 2)^2 - 11$ C. $y = -2(x + 4)^2 - 23$ D. $y = -2(x + 4)^2 + 39$

26. Solve $x^2 + x - 3 = 0$

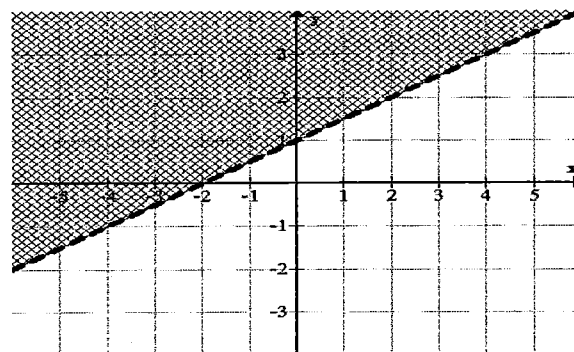
- A. $x = \frac{-1 \pm \sqrt{13}}{2}$ B. $x = \frac{-1 \pm \sqrt{11}}{2}$ C. $x = \frac{-1 \pm 2\sqrt{2}}{2}$ D. no solution

27. Solve the quadratic inequality $0 < x^2 - 8x + 12$

- A. $-6 < x < -2$ B. $x < -6, -2 < x$ C. $2 < x < 6$ D. $x < 2, 6 < x$

28. Determine the equation of the inequality.

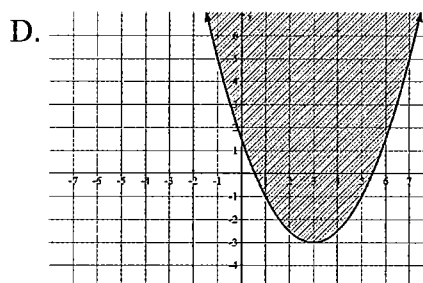
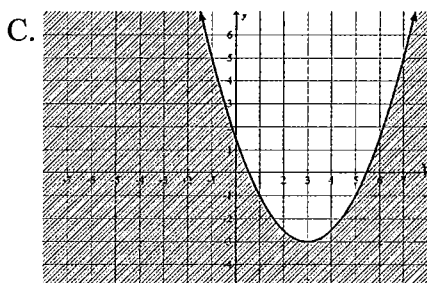
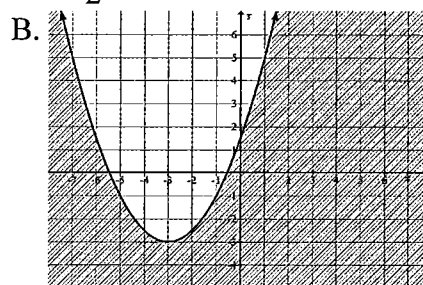
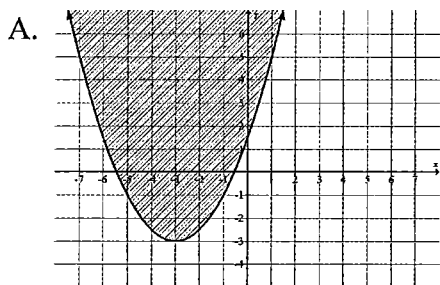
- A. $y > \frac{1}{2}x + 1$
 B. $y \geq \frac{1}{2}x + 1$
 C. $y < \frac{1}{2}x + 1$
 D. $y \leq \frac{1}{2}x + 1$



29. Two numbers are related in this way: 3 subtracted from the first number then squared is less than or equal to the other number plus 7. Which equation represents this situation?

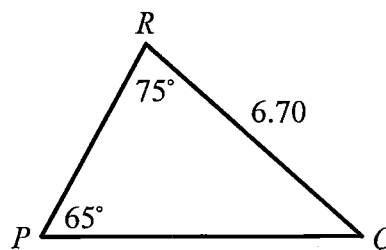
- A. $x^2 - 3 \geq y + 7$ B. $x^2 - 3 \leq y + 7$ C. $(x - 3)^2 \geq y + 7$ D. $(x - 3)^2 \leq y + 7$

30. Which graph below best represents the inequality $y \geq \frac{1}{2}(x+3)^2 - 3$



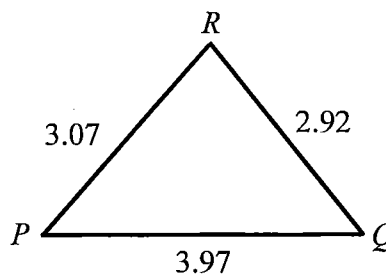
31. Determine the length of the side PQ

- A. 6.07
- B. 6.29
- C. 6.47
- D. 7.14



32. Determine the measure of $\angle P$

- A. 36°
- B. 43°
- C. 47°
- D. 68°



33. Solve: $\sin x = -0.208$ on the interval $0 \leq x < 360^\circ$

- A. $x = -12^\circ$
- B. $x = 192^\circ, 348^\circ$
- C. $x = 12^\circ, 168^\circ$
- D. $x = -12^\circ, 192^\circ$

34. Simplify the rational expression $\frac{x^2 - 16}{x^2 + 2x - 8}$ and state non-permissible values.

- A. $\frac{x-4}{x-2}, x \neq -4, 2$
- B. $\frac{x+4}{x-2}, x \neq -4, 2$
- C. $\frac{x+4}{x-2}, x \neq -4, -2$
- D. $\frac{x-4}{x-2}, x \neq -2, 4$

35. Simplify $\frac{10a^5b^2}{a} \div \frac{ab}{2}$

- A. $20a^3b$
- B. $5a^5b^3$
- C. $\frac{20}{a^3b}$
- D. $\frac{5}{a^5b^3}$

36. Express the quotient $\frac{x^2 - x - 6}{x^2 + 7x + 10} \div \frac{2x^2 + x - 1}{x^2 + 6x + 5}$ in simplest form.

- A. $\frac{2x-1}{x-3}$ B. $\frac{x-3}{2x-1}$ C. $\frac{(x-3)(2x-1)}{(x+5)^2}$ D. $\frac{(x+5)^2}{(x-3)(2x-1)}$

37. Simplify $\frac{5}{x+3} - \frac{2}{x-3}$

- A. $\frac{3x-21}{x^2-9}$ B. $\frac{3}{x+3}$ C. $\frac{7}{x+3}$ D. $\frac{7x-9}{x^2-9}$

38. Solve for x exactly: $\frac{1}{x} - \frac{1}{x+2} = 3$

- A. $x = \frac{-3 \pm \sqrt{21}}{3}$ B. $x = \frac{-3 \pm \sqrt{15}}{3}$ C. $x = \frac{-3 \pm \sqrt{3}}{3}$ D. *no solution*

39. Elli and Helmut are meeting at the Big Bird Auction and Ice Cream Emporium in Vancouver this weekend. Elli has to travel 480km while Helmut only has to travel 387km. On average, Elli travels 10km/h faster than Helmut. If Elli's trip takes a half-hour longer than Helmut's, which of the following equations could be used to determine Helmut's average speed?

- A. $\frac{480}{x+10} - 30 = \frac{387}{x}$ B. $\frac{480}{x+10} + 30 = \frac{387}{x}$ C. $\frac{480}{x+10} + \frac{1}{2} = \frac{387}{x}$ D. $\frac{480}{x+10} - \frac{1}{2} = \frac{387}{x}$

40. Determine the piece-wise equation that best represents the function $y = \left| -(x+3)^2 + 4 \right|$

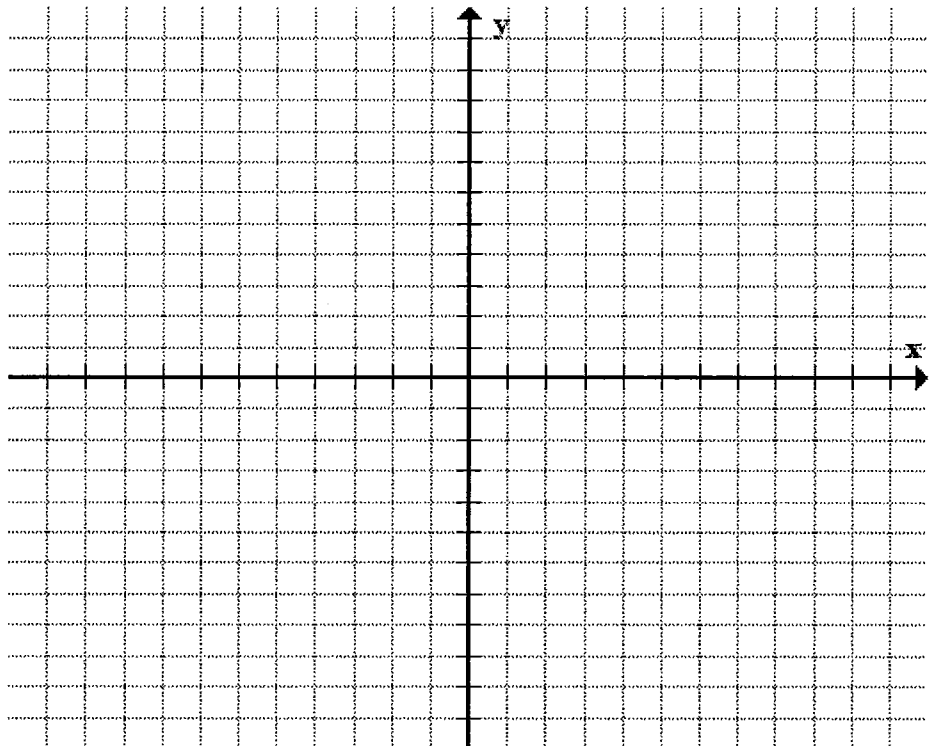
- A. $y = \begin{cases} (x+3)^2 - 4 & x < -5 \\ -(x+3)^2 + 4 & \text{if } -5 \leq x \leq -1 \\ (x+3)^2 - 4 & -1 < x \end{cases}$ B. $y = \begin{cases} (x+3)^2 + 4 & x < -5 \\ -(x+3)^2 + 4 & \text{if } -5 \leq x \leq -1 \\ (x+3)^2 + 4 & -1 < x \end{cases}$
- C. $y = \begin{cases} -(x+3)^2 + 4 & x < -5 \\ (x+3)^2 - 4 & \text{if } -5 \leq x \leq -1 \\ -(x+3)^2 + 4 & -1 < x \end{cases}$ D. $y = \begin{cases} -(x+3)^2 + 4 & x < -5 \\ (x+3)^2 + 4 & \text{if } -5 \leq x \leq -1 \\ -(x+3)^2 + 4 & -1 < x \end{cases}$

Part C: Open-Ended Section

1. Solve the following system of equations algebraically.

$$y = -3x + 5$$
$$y = 3(x - 4)^2 - 7$$

2. Solve $|2(x - 4)^2 - 8| = 2x - 4$ by graphing.



3. Solve algebraically: $|-3x^2 - 18x - 23| = 8$

Pre-Calculus Math 11

Practice Final Exam Answers

Part A: Non-Calculator Section

1. B	2. A	3. C	4. A	5. B	6. A	7. C	8. B	9. B	10. D
11. C	12. C	13. A	14. B	15. A	16. A	17. B	18. C	19. A	20. D

Part B: Calculator Section

1. A	2. C	3. A	4. D	5. C	6. C	7. B	8. B	9. B	10. D
11. A	12. A	13. C	14. A	15. A	16. B	17. A	18. D	19. D	20. A
21. C	22. C	23. B	24. D	25. A	26. A	27. D	28. A	29. D	30. A
31. D	32. C	33. B	34. A	35. A	36. B	37. A	38. B	39. D	40. A

Part C: Open-Ended Section

1. $(4, -7), (3, -4)$ 2. $x = 2, 5, \text{ and } 7$ 3. $x = -5 \text{ and } -1$

Pre-Calculus Math 11

Practice Final Exam Answers

Part A: Non-Calculator Section

1. B	2. A	3. C	4. A	5. B	6. A	7. C	8. B	9. B	10. D
11. C	12. C	13. A	14. B	15. A	16. A	17. B	18. C	19. A	20. D

Part B: Calculator Section

1. A	2. C	3. A	4. D	5. C	6. C	7. B	8. B	9. B	10. D
11. A	12. A	13. C	14. A	15. A	16. B	17. A	18. D	19. D	20. A
21. C	22. C	23. B	24. D	25. A	26. A	27. D	28. A	29. D	30. A
31. D	32. C	33. B	34. A	35. A	36. B	37. A	38. B	39. D	40. A

Part C: Open-Ended Section

1. $(4, -7), (3, -4)$ 2. $x = 2, 5, \text{ and } 7$ 3. $x = -5 \text{ and } -1$

