

READINESS PLACEMENT EXAM

1. $2 - [2(-5 + 3) - 3] =$
A) -8 B) -5 C) 1 D) 3 E) 9
2. $5x + 3(x - y) - y =$
A) $2(4x - y)$ B) $2(4x - 3y)$ C) $4(2x - y)$ D) $8x - y$ E) $8x$
3. If $.06x = 30$, then $x =$
A) 1.8 B) 5 C) 29.94 D) 18 E) 500
4. $\sqrt{50x^8y^{12}} =$
A) $5x^4y^6\sqrt{2}$ B) $25x^8y^{12}$ C) $25x^4y^6$ D) $5x^6y^{10}\sqrt{2}$ E) $5x^4y^6$
5. $3y - 4(y - 3) + 3(x - 3) =$
A) $-y + 3x + 3$ B) $-y + 3x - 21$ C) $-y + 3x - 6$ D) $-4y + 3x$ E) $-4y + 3x + 3$
6. $\frac{3}{3 + \frac{1}{2}} =$
A) $\frac{3}{4}$ B) $\frac{6}{7}$ C) $\frac{4}{3}$ D) $\frac{3}{2}$ E) 2
7. $(4x^2y)(-3x^5y^4) =$
A) $-12x^7y^5$ B) $-12x^{10}y^4$ C) $x^{-3}y^{-3}$ D) $-12x^7y^4$ E) $x^{10}y^4$
8. $3^{0+2} =$
A) 0 B) 12 C) 16 D) 24 E) 144
9. The graph of $x - 4y + 8 = 0$ crosses the y-axis at $y =$
A) -8 B) -2 C) 0 D) 2 E) 8
10. $\frac{4uv^2 - 2u^2v}{2uv} =$
A) $2v - u$ B) $2v - 2u^2v$ C) 1 D) $4uv^2 - u$ E) uv

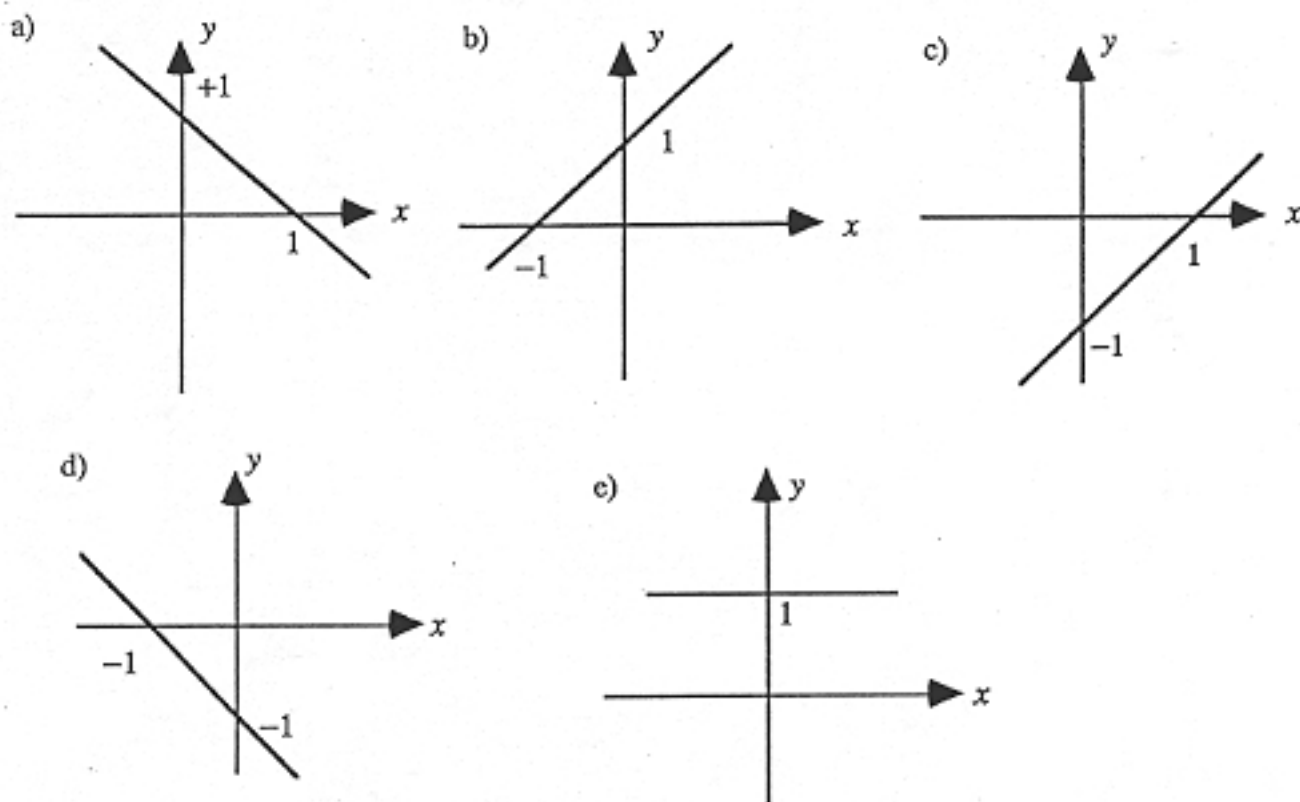
11. $\frac{8}{\sqrt{10}} =$

- A) $\sqrt{\frac{4}{5}}$ B) $\frac{4\sqrt{10}}{5}$ C) $\frac{\sqrt{10}}{8}$ D) $\frac{4}{\sqrt{5}}$ E) $\frac{\sqrt{5}}{4}$

12. The length L of a spring is given by $L = \frac{3}{4}F + 8$ where F is the applied force. What force F will produce a length of 10?

- A) $\frac{8}{3}$ B) $\frac{16}{3}$ C) $\frac{32}{3}$ D) $\frac{31}{2}$ E) 24

13. The graph of $x + y = 1$ is



14. Find all x for which $|-x| = 4$.

- A) 4 B) -4 C) 4 and -4 D) 4, 0, and 4
E) no such x exists

15. If $\frac{1}{x-3} + 7 = \frac{x}{x-3}$, then $x =$

- A) $-\frac{10}{3}$ B) $-\frac{1}{3}$ C) $\frac{1}{3}$ D) $\frac{10}{3}$ E) 8

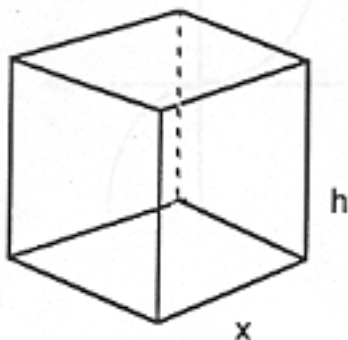
16. $3x - 6 < 2x + 4$ is equivalent to
- A) $x < -2$ B) $x < 2$ C) $x < \frac{10}{3}$ D) $x < 10$ E) $x < 30$
17. $\frac{x^2 - 9}{3x} \cdot \frac{12}{2x - 6} =$
- A) -3 B) 6 C) $2(x + 3)$ D) $\frac{2(x - 3)}{x}$ E) $\frac{2(x + 3)}{x}$
18. The solutions of $2x^2 + x - 3 = 0$ are
- A) $-\frac{3}{2}, -1$ B) $\frac{3}{2}, -1$ C) $-3, 1$ D) $-\frac{3}{2}, 1$ E) $\frac{3}{2}, 1$
19. $\frac{1}{u} - \frac{5}{v} =$
- A) $\frac{-4}{u - v}$ B) $\frac{-4}{u + v}$ C) $\frac{-4}{uv}$ D) $\frac{v - 5u}{uv}$ E) $\frac{u - 5v}{uv}$
20. If $x = \frac{3}{4}$, then $x^{-2} =$
- A) $-\frac{16}{9}$ B) $-\frac{6}{8}$ C) $-\frac{9}{16}$ D) $\frac{6}{8}$ E) $\frac{16}{9}$
21. If $\log_{10} x = 2$, then $x =$
- A) $\frac{1}{100}$ B) $\frac{2}{10}$ C) 10 D) 20 E) 100
22. $|3 - x| < 3$ is equivalent to
- A) $0 < x < 6$ B) $x > 0$ C) $x < 0$ D) $x > 6$ E) $x < 6$
23. The x-coordinate of the solution of the system $\begin{cases} 3x + 6y = 4 \\ x - 3y = 1 \end{cases}$ is
- A) $\frac{1}{15}$ B) $\frac{1}{3}$ C) 1 D) $\frac{6}{5}$ E) $\frac{5}{3}$
24. If $f(x) = \frac{3 - x}{x + 3}$, then $f(2) =$
- A) $-\frac{1}{5}$ B) $\frac{1}{5}$ C) $\frac{1}{3}$ D) 1 E) 5

25. Which of the following are factors of $x^4 - 81$?
- I. $x - 3$ II. $x + 3$ III. $x^2 + 9$
- A) I only B) II only C) III only D) I and II only E) I, II, and III
26. $\frac{u}{3v} + \frac{u}{4v} =$
- A) $12uv$ B) $\frac{7u}{12v}$ C) $\frac{2u}{7v}$ D) $7uv$ E) $\frac{7u}{12v^2}$
27. A solution of $x^2 + 4x = +5$ is
- A) -9 B) -5 C) $-2 + 1$ D) -4 E) -1
28. $(8)^{2/3}(16)^{1/4}$
- A) 2 B) 4 C) 8 D) 16 E) 32
29. $x^2 - 9x < 10$ is equivalent to
- A) $-2 < x < 5$ B) $2 < x < 5$ C) $x < 2$ or $x > 5$ D) $-1 < x < 10$ E) $x < -1$ or $x > 10$
30. The graphs of the equations $\begin{cases} x + 3y = 6 \\ 2x - 6y = 0 \end{cases}$ consist of
- A) two lines which intersect at the point $\left(2, \frac{4}{3}\right)$
- B) two lines which intersect at the point $(3, 1)$
- C) two lines which intersect at the point $\left(\frac{4}{3}, 2\right)$
- D) two distinct parallel lines
- E) one line
31. If $f(x) = x^2 + 3$, then $f(x - h) =$
- A) $x^2 - h^2 + 3$ B) $(x - h)^2 + 3$ C) $(x - h + 3)^2$ D) $x^2 + 3 - h$ E) $(x^2 + 3) - (h^2 + 3)$
32. If $7^x = 3$, then $x =$
- A) $\frac{3}{7}$ B) $\frac{7}{3}$ C) $\log_3(7)$ D) $\log_7(3)$ E) $\log_{10}\left(\frac{3}{7}\right)$

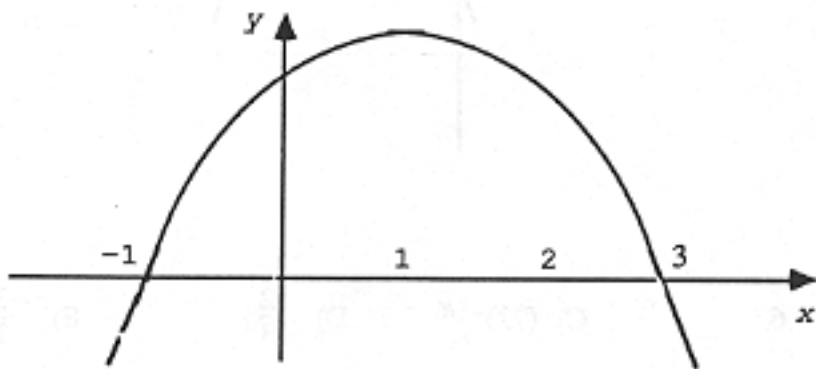
PART 1 B

(In all graphing problems, assume the usual coordinate system.)

33. The box pictured below has a square base and a closed top.
Express its surface area in terms of x and h .

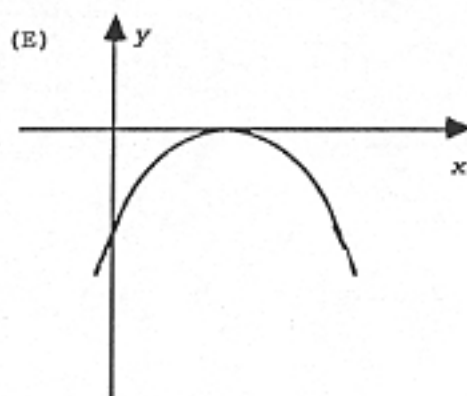
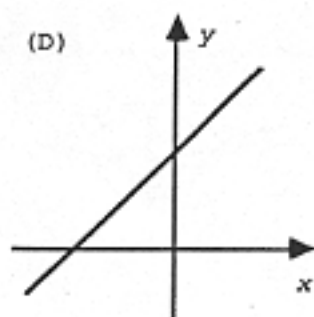
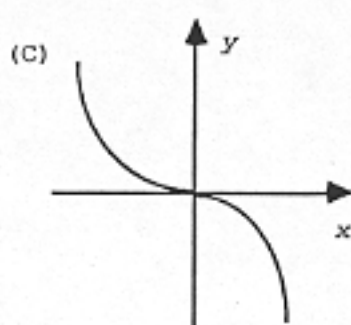
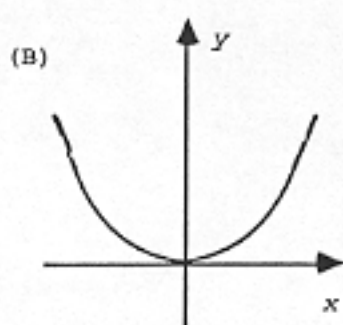
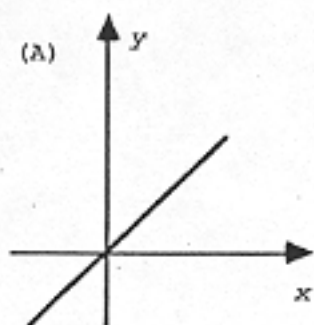


- A) $x^2 + 4xh$ B) $8x + 4h$ C) $4x + h$ D) hx^2 E) $2x^2 + 4xh$
34. If $f(x)$ is a function whose graph is the parabola sketched below, then $f(x) < 0$ whenever



- A) $x < 0$ B) $x < 3$ C) $x > 1$ D) $x < -1$ or $x > 3$ E) $-1 < x < 3$
35. If money in a bank doubles every 5 years, then by what factor does it increase over a 20 year period?
- A) 4 B) 8 C) 12 D) 16 E) 20
36. The y-coordinate of the intersection of the graphs of $x - 2y = 6$ and $x + y = -3$ is
- A) -3 B) -2 C) -1 D) 1 E) 3

37. Definition: A function is *even* if $f(-x) = f(x)$ for each x in the domain of f . Which of the functions whose graphs are shown is even?



38. $8^{-1/3} 9^{1/2} =$

- A) 6 B) -6 C) $(72)^{-1/6}$ D) $\frac{2}{3}$ E) $\frac{3}{2}$

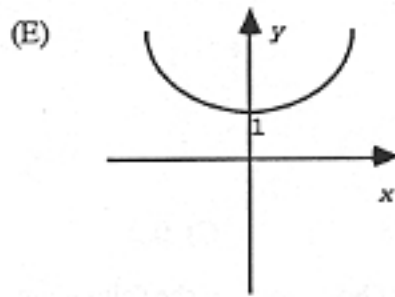
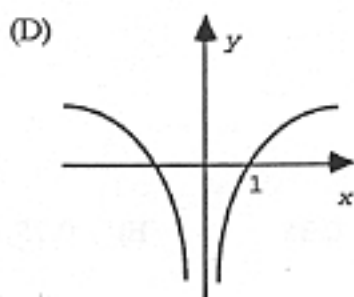
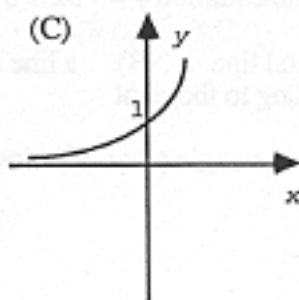
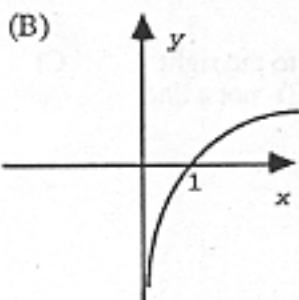
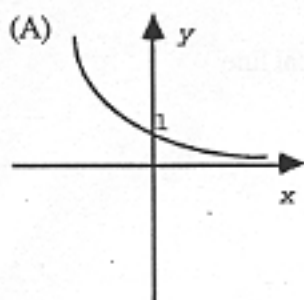
39. Which of the following best resembles the graph of $y = \frac{1}{2}x^2 - 3x + 1$?



40. If $\log_3(x + 1) = 2$, then $x =$

- A) 5 B) 6 C) 7 D) 8 E) $\frac{2}{\log_3} - 1$

41. Which of the following curves best resembles the graph of $f(x) = 3^x$?



42. If $\frac{(2x + 1)(x - 1)}{(x + 1)} = 0$, then $x =$

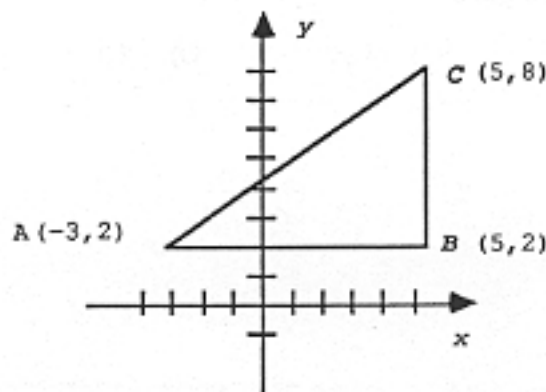
A) -1 or 1 B) $-\frac{1}{2}$ or 1 C) $-\frac{1}{2}$, 1 or -1 D) $\frac{1}{2}$ or -1 E) $\frac{1}{2}$, 1 or -1

43. The symbol " \approx " means "is approximately equal to." Given that $3^7 \approx 2000$, then $3^{14} \approx$

A) 4,000 B) 40,000 C) 400,000 D) 4,000,000 E) $2,000^8$

44. In the given figure, the distance between points A and C is

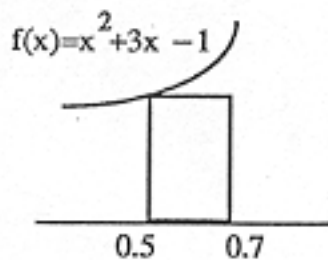
- (A) 8
(B) 10
(C) 12
(D) 14
(E) 16



45. If $f(x) = \frac{2x + 6}{x + 2}$, then $f(a + 2) =$

A) $\frac{5}{2}$ B) $\frac{2a + 8}{a + 4}$ C) $\frac{2a + 10}{a + 4}$ D) $\frac{2a + 6}{a + 2}$ E) $\frac{2a + 6}{a + 4}$

46. The graph of the equation $y = -5x + 3$ is
- A) a horizontal line B) a line rising to the right C) a vertical line
 D) a line falling to the right E) not a line
47. The area of the rectangle pictured below is



- A) 0.015 B) 0.15 C) 0.2 D) 0.35 E) 0.75
48. The quantity $a + b$ is a factor of how many of the following:
- $a^2 - b^2$ $a^2 + b^2$ $a^3 - b^3$ $a^3 + b^3$
- A) 0 B) 1 C) 2 D) 3 E) 4
49. Suppose the sides of a rectangle with length x and width y are each doubled. The increase in the area of the rectangle is
- A) xy B) $2xy$ C) $3xy$ D) $4xy$ E) x^2y^2
50. The length of a certain rectangle is 3 meters more than twice its width. If the perimeter of the rectangle is 90 meters, then the width of the rectangle is
- A) 6 m B) 12 m C) 14 m D) 16 m E) 29 m

Math Exam Answer Sheet

Name: _____ Date: _____

Address: _____ Phone: _____

Approximate Time Used: _____

Please check one:

I took the Readiness Test

I took the Calculus Test

I took neither test because _____

Answers:

- | | | | |
|-----------|-----------|-----------|-----------|
| 1. _____ | 14. _____ | 27. _____ | 40. _____ |
| 2. _____ | 15. _____ | 28. _____ | 41. _____ |
| 3. _____ | 16. _____ | 29. _____ | 42. _____ |
| 4. _____ | 17. _____ | 30. _____ | 43. _____ |
| 5. _____ | 18. _____ | 31. _____ | 44. _____ |
| 6. _____ | 19. _____ | 32. _____ | 45. _____ |
| 7. _____ | 20. _____ | 33. _____ | 46. _____ |
| 8. _____ | 21. _____ | 34. _____ | 47. _____ |
| 9. _____ | 22. _____ | 35. _____ | 48. _____ |
| 10. _____ | 23. _____ | 36. _____ | 49. _____ |
| 11. _____ | 24. _____ | 37. _____ | 50. _____ |
| 12. _____ | 25. _____ | 38. _____ | |
| 13. _____ | 26. _____ | 39. _____ | |

Comments:

Return by August 12 to Undergraduate Dean's Office, Bryn Mawr College, 101 N. Merion Ave., Bryn Mawr, PA 19010