**MATH 2 EXAM REVIEW**

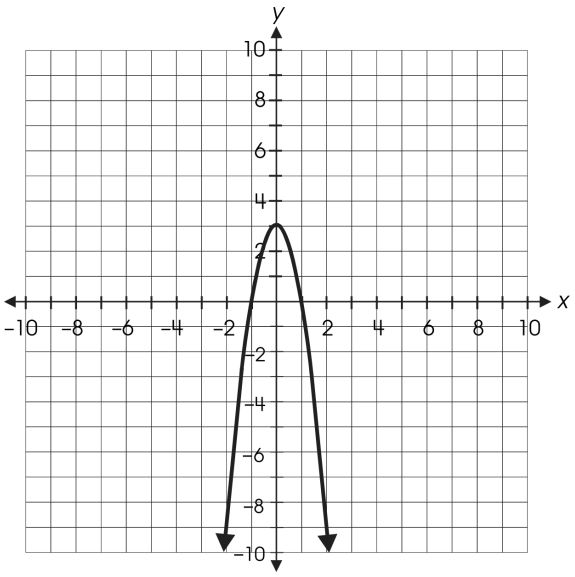
**Name:** _____ **Date:** _____

1. The graph of $f(x) = x^2$ will be translated 5 units up and 2 units to the right. Which function describes the graph produced by the translation?

   **A.** $g(x) = x^2 - 4x + 9$ **B.** $g(x) = x^2 + 4x - 1$

   **C.** $g(x) = x^2 - 10x + 27$ **D.** $g(x) = x^2 + 10x + 23$

2. The graph represents the equation $y = -3x^2 + 3$.

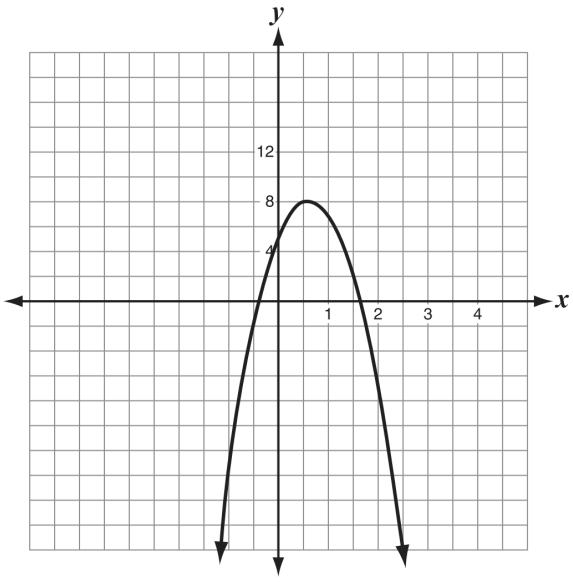



   What are the solutions to $0 = -3x^2 + 3$?

   **A.** 1 and −1 **B.** 3 and −3

   **C.** 3 and 1 **D.** 3 and −1

3. Which equation represents the graph shown below?




   **A.** $y = 8x^2 - 10x - 5$ **B.** $y = 8x^2 - 10x + 5$

   **C.** $y = -8x^2 + 10x - 5$ **D.** $y = -8x^2 + 10x + 5$

4. An object that is projected straight downward with initial velocity $v$ feet per second travels a distance $s = vt + 16t^2$, where $t$ = time in seconds. If Ramón is standing on a balcony 84 feet above the ground and throws a penny straight down with an initial velocity of 10 feet per second, in how many seconds will it reach the ground?

   **A.** 2 seconds **B.** 3 seconds

   **C.** 6 seconds **D.** 8 seconds

5. Pedro throws a ball upward at a rate of 20 meters per second from an initial height of 2 meters. The height of the ball above the ground can be approximated by $h = -5t^2 + 20t + 2$, where $t$ represents the amount of time, in seconds, since the ball has been released.

   What is the maximum height that the ball reaches?

   **A.** 5 meters **B.** 6 meters

   **C.** 20 meters **D.** 22 meters

6. The graph of the quadratic equation $y = (x + 1)^2 - 3$ is reflected across the $y$-axis and then translated 2 units down. Which are the coordinates of the vertex of the new graph?

**A.** $(-1, 1)$ **B.** $(1, -1)$

**C.** $(1, -5)$ **D.** $(-1, -5)$

7. In the function $f(x) = a(x - 4)^2$, where $a > 0$, what happens to the graph of $f$ as the value of $a$ increases?

**A.** The graph narrows.

**B.** The graph widens.

**C.** The graph shifts up.

**D.** The graph shifts right.

8. The heights of two different projectiles after they are launched are modeled by $f(x)$ and $g(x)$. The function $f(x)$ is defined as $f(x) = -16x^2 + 42x + 12$. The table contains the values for the quadratic function $g$.

| $x$ | $g(x)$ |
|---|---|
| 0 | 9 |
| 1 | 33 |
| 2 | 25 |

What is the *approximate* difference in the maximum heights achieved by the two projectiles?

**A.** 0.2 feet **B.** 3.0 feet

**C.** 5.4 feet **D.** 5.6 feet

9. The table below represents a quadratic function.

| $x$ | $f(x)$ |
|---|---|
| −5 | −3 |
| −4 | 0 |
| −1 | −3 |
| 0 | −8 |
| 1 | −15 |

Which describes a complete list where the zeros of $f(x)$ occur?

**A.** $x = 8$ and $x = 4$ **B.** $x = 4$ and $x = 2$

**C.** $x = -8$ and $x = -4$ **D.** $x = -4$ and $x = -2$

10. Which is equivalent to $(-3m^9)(4m^{-5})$?

**A.** $-12m^{-4}$ **B.** $-12m^4$

**C.** $\frac{4}{3m^4}$ **D.** $\frac{-3m^4}{4}$

11. $(jk)^{-5}(jk)^3 =$

**A.** $(jk)^{-2}$ **B.** $(jk)^{-8}$ **C.** $(2jk)^{-2}$ **D.** $(2jk)^{-8}$

12. Which is a simplified form of $\frac{3a^2b^3c^{-2}}{(a^{-1}b^2c)^3}$?

**A.** $\frac{3a^5}{b^3c^5}$ **B.** $\frac{3ab}{c^5}$ **C.** $\frac{3}{b^2c^5}$ **D.** $\frac{3}{ab^3c^5}$

13. What is the simplified form of the expression?

$$\frac{4x^3y^3}{8x^5y^2}$$

**A.** $\frac{y}{2x^2}$ **B.** $\frac{2y}{x^2}$ **C.** $2x^2y$ **D.** $2x^8y^5$

14. Simplify: $(x^2y^{-3}x^{-4}y^5)^3$

**A.** $\frac{x}{y}$ **B.** $\frac{y}{x}$ **C.** $\frac{x^6}{y^6}$ **D.** $\frac{y^6}{x^6}$

15. Which is equivalent to the following expression?

$$\left(\frac{2x^5y^6z^2}{-3x^2y^4z^6}\right)^{-2}$$

**A.** $\frac{4x^6y^4}{9z^8}$ **B.** $\frac{9z^8}{4x^6y^4}$

**C.** $\frac{-9z^8}{4x^6y^4}$ **D.** $\frac{-4x^6y^4}{9z^8}$

16. Multiply:

$(3x^6y^4)^{-1}(3x^5y^3)^2$

**A.** $-27x^{11}y^7$ **B.** $-18x^{11}y^7$

**C.** $2x^4y^2$ **D.** $3x^4y^2$

17. Simplify.

$$(x^2 - 3x + 1) - (x^2 + 2x + 7)$$

**A.** $x - 6$ **B.** $-x + 8$

**C.** $-5x - 6$ **D.** $2x^2 - x + 8$

18. $(-2x^2 + 6x + 1) - 2(4x^2 - 3x + 1)$

**A.** $6x^2 - 1$ **B.** $-10x^2 - 1$

**C.** $6x^2 + 12x - 1$ **D.** $-10x^2 + 12x - 1$

19. Simplify: $2x(x^2 + 3xy + 6y^2)$

**A.** $2x^3 + 3xy + 6y^2$ **B.** $2x^3 + 6x^2y + 12xy^2$

**C.** $2x^2 + 6xy + 12y^2$ **D.** $2x^2 + 6x^2y + 12xy^2$

20. Simplify: $-2xy(-3xy^2 + 4x^2y)$

**A.** $-2x^3y^3$ **B.** $-14x^3y^3$

**C.** $-6x^2y^2 - 8x^2y^2$ **D.** $6x^2y^3 - 8x^3y^2$

21. Simplify: $(x + 7)(x - 4)$

**A.** $2x + 3$ **B.** $x^2 - 28$

**C.** $x^2 - 3x - 28$ **D.** $x^2 + 3x - 28$

22. Which of the following expressions is equivalent to the one shown below?

$(x - 3)(2x + 5)$

**A.** $2x^2 - x - 15$ **B.** $2x^2 - 15$

**C.** $2x^2 + 11x - 15$ **D.** $2x2 + 2$

23. Which of the following expressions is equivalent to $(x - y)^2$?

**A.** $x^2 + 2xy - y^2$ **B.** $x^2 + 2xy + y^2$

**C.** $x^2 - 2xy + y^2$ **D.** $x^2 - 2xy - y^2$

24. Which polynomial represents $(3x^2 + x - 4)(2x - 5)$?

**A.** $6x^3 - 13x^2 - 13x - 20$

**B.** $6x^3 - 13x^2 - 13x + 20$

**C.** $6x^3 + 13x^2 + 3x - 20$

**D.** $6x^3 + 13x^2 + 3x + 20$

25. Which is the factored form of $3a^2 - 24ab + 48b^2$?

**A.** $(3a - 8b)(a - 6b)$ **B.** $(3a - 16b)(a - 3b)$

**C.** $3(a - 4b)(a - 4b)$ **D.** $3(a - 8b)(a - 8b)$

26. Which is a factor of $x^2 - 11x + 24$?

**A.** $x + 3$ **B.** $x - 3$ **C.** $x + 4$ **D.** $x - 4$

27. What is the complete factorization of $32 - 8z^2$?

**A.** $-8(2 + z)(2 - z)$ **B.** $8(2 + z)(2 - z)$

**C.** $-8(2 + z)^2$ **D.** $8(2 - z)^2$

28. Which expression shows the complete factorization of $12x^2 - 147$?

**A.** $(3x - 7)(4x + 2)$ **B.** $(4x - 21)(3x + 7)$

**C.** $12(x - 7)(x + 7)$ **D.** $3(2x - 7)(2x + 7)$

29. Which of these shows the following expression factored completely?

$6x^2 + 15x - 36$

**A.** $(2x - 3)(x + 4)$ **B.** $(6x + 9)(x - 4)$

**C.** $3(2x - 3)(x + 4)$ **D.** $3(2x + 3)(x - 4)$

30. Which of the following binomials is a factor of $4x^2 - 16$?

**A.** $x - 2$ **B.** $2x + 8$ **C.** $x^2 + 4$ **D.** $2x^2 - 4$

31. When factored completely, which is a factor of $12ax^2 - 3a$?

**A.** $12a$ **B.** $(4x^2 + 1)$

**C.** $3a$ **D.** $(4x - 1)$

32. What is the complete factorization of the polynomial shown?

$5x^3 - 20x^2 - 25x$

**A.** $x(5x^2 - 20) - 25$ **B.** $5x(x + 5)(x - 1)$

**C.** $5x(x - 5)(x + 1)$ **D.** $x(5x^2 - 20x - 25)$

33. Which binomial is a factor of $(x^3 - x^2 + 3x - 3)$?

**A.** $x - 3$ **B.** $x + 1$ **C.** $x^2 - 1$ **D.** $x^2 + 3$

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1.
Answer: A

2.
Answer: A

3.
Answer: D

4.
Answer: A

5.
Answer: D

6.
Answer:

7.
Answer: A

8.
Answer: D

9.
Answer: D

10.
Answer: B

11.
Answer: A

12.
Answer: A

13.
Answer: A

14.
Answer: D

15.
Answer: B

16.
Answer: D

17.
Answer: C

18.
Answer: D

19.
Answer: B

20.
Answer: D

21.
Answer: D

22.
Answer: A

23.
Answer: C

24.
Answer: B

25.
Answer: C

26.
Answer: B

27.
Answer: B

28.
Answer: D

29.
Answer: C

30.
Answer: A

31.
Answer: C

32.
Answer: C

33.
Answer: D