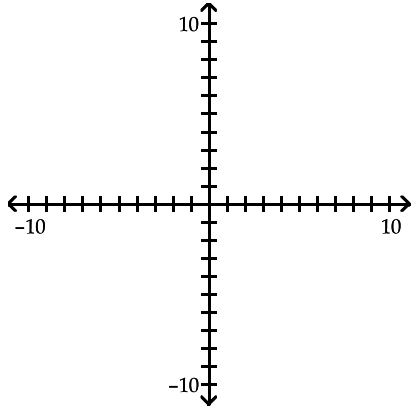


Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**Describe how to transform the graph of an appropriate monomial function $f(x) = x^n$ into the graph of the given polynomial function. Then sketch the transformed graph.**

1) $g(x) = 3(x - 5)^4 + 3$

**Divide $f(x)$ by $d(x)$, and write a summary statement in the form indicated.**

2) $f(x) = x^3 + 5x^2 + 8x - 4$; $d(x) = x + 4$ (Write answer in polynomial form)

3) $f(x) = x^4 - 5x^3 - 3x^2 - 10x - 8$; $d(x) = x^2 - 5x - 4$
(Write answer in polynomial form)

Divide using synthetic division, and write a summary statement in fraction form.

4)
$$\frac{2x^3 - 3x^2 - 5x + 4}{x - 2}$$

Write an equation for the quadratic function whose graph contains the given vertex and point.

5) Vertex (3, -5), point (-2, -80)

Find all rational zeros.

6) $f(x) = x^3 - 8x^2 + 11x + 20$

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the zeros of the function.

7) $f(x) = x^2 + 4x + 3$

A) -3 and 1

B) 3 and 1

C) 3 and -1

D) -3 and -1

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Find all of the real zeros of the function. Give exact values whenever possible. Identify each zero as rational or irrational.

8) $f(x) = x^4 + 2x^3 - 26x^2 - 22x + 165$

Find the vertex of the graph of the function.

9) $f(x) = 3x^2 + 24x + 50$

Write the quadratic function in vertex form.

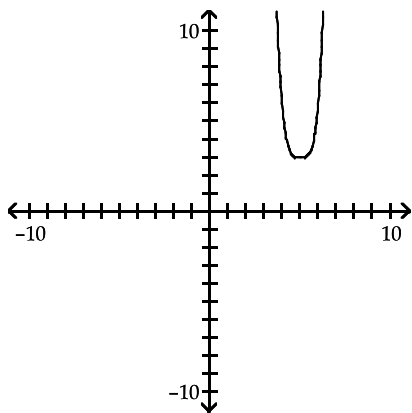
10) $y = x^2 + 18x + 80$

Answer Key

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SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

- 1) Obtain the graph of $g(x) = 3(x - 5)^4 + 3$ by shifting the graph of $g(x) = x^4$ five units to the right, vertically stretching by a factor of 3 and vertically shifting three units up.



2) $f(x) = (x + 4)(x^2 + x + 4) - 20$

3) $f(x) = (x^2 - 5x - 4)(x^2 + 1) - 5x - 4$

4) $2x^2 + x - 3 + \frac{-2}{x - 2}$

5) $P(x) = -3x^2 + 18x - 32$

6) 4, 5, -1

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

7) D

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

8) -5 (rational), 3 (rational), $\sqrt{11}$ (irrational), and $-\sqrt{11}$ (irrational)

9) (-4, 2)

10) $y = (x + 9)^2 - 1$

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