Algebra 2 Unit 5 Review #1

Identify the leading coefficient, degree, maximum turning points, and end behavior.

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

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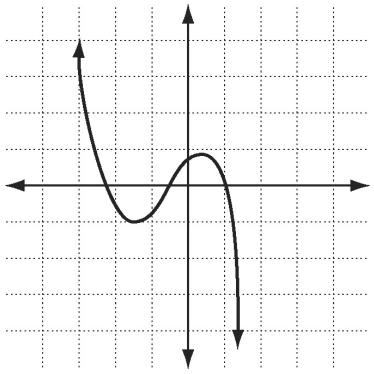
2. $Q(x) = 12 + 8x - 16x^3 - x^2$

_____

Identify whether the function graphed has an odd or even degree and a positive or negative leading coefficient.

3.



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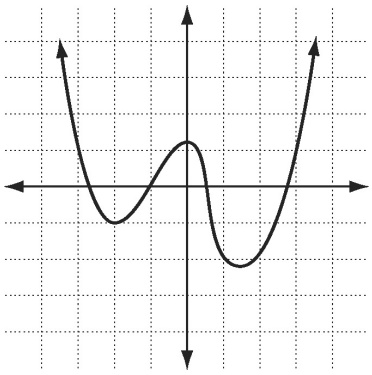

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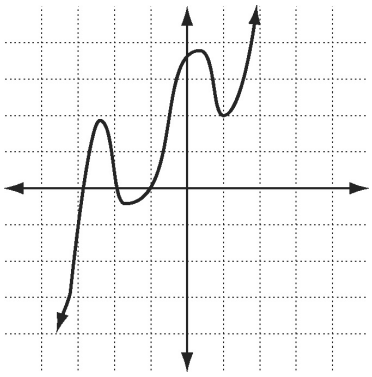
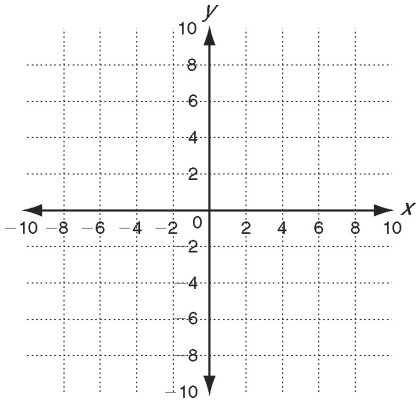


_____ _____ _____

Graph the function.

6. $P(x) = x^3 + 2x^2 - 4x - 8$



Solve each equation.

7. $\dfrac{12r}{r+2} = \dfrac{4}{r+2} - 6$

_____

8. $\dfrac{4x}{x-4} = \dfrac{2x+8}{x-4}$

_____

9. $-\dfrac{6}{x} + 1 = \dfrac{7}{x^2}$

_____

10. $\dfrac{2}{d+2} + \dfrac{8}{d-2} = \dfrac{14}{d^2-4}$

_____

Simplify. Identify any *x*-values for which the expression is undefined.

11. $\dfrac{x^2+3x+2}{x^2-3x-4}$

12. $\dfrac{4x^6}{2x^4}$

13. $\dfrac{x^2-x^3}{2x^2-5x+3}$

14. $\dfrac{x^3+x^2-20x}{x^2-16}$

15. $\dfrac{3x^2-9x-12}{6x^2+9x+3}$

16. $\dfrac{9-3x}{15-2x-x^2}$

Multiply. Simplify.

17. $\dfrac{4x+16}{2x+6} \bullet \dfrac{x^2+2x-3}{x+4}$

18. $\dfrac{x+3}{x-1} \bullet \dfrac{x^2-2x+1}{x^2+5x+6}$

Divide. Simplify.

19. $\dfrac{5x^6}{x^2y} \div \dfrac{10x^2}{y}$

20. $\dfrac{x^2-2x-8}{x^2-2x-15} \div \dfrac{2x^2-8x}{2x^2-10x}$

Find the least common multiple for each pair.

21. $3x^2y^6$ and $5x^3y^2$

22. $x^2 + x - 2$ and $x^2 - x - 6$

Add or subtract. Simplify.

23. $\dfrac{2x-3}{x+4} + \dfrac{4x-5}{x+4}$

24. $\dfrac{x+12}{2x-5} - \dfrac{3x-2}{2x-5}$

25. $\dfrac{x+4}{x^2-x-12} + \dfrac{2x}{x-4}$

26. $\dfrac{3x^2-1}{x^2-3x-18} - \dfrac{x+2}{x-6}$

1. -6; 4; 3; as $x \to -\infty$, $R(x) \to -\infty$: and as $x \to +\infty$, $R(x) \to -\infty$

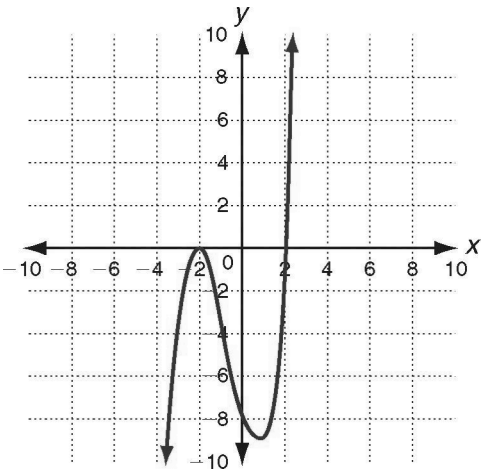
2. -16; 3; 2; as $x \to -\infty$, $Q(x) \to +\infty$: and as $x \to +\infty$, $Q(x) \to -\infty$

3. Odd; negative

4. Even; positive

5. Odd; positive

6.



7. $r = -\dfrac{4}{9}$

8. no solution.

9. $x = 7$ and $x = -1$

10. $d = \dfrac{1}{5}$

11. $\dfrac{x+2}{x-4}$; $x \neq -1$, $x \neq 4$

12. $2x^2$; $x \neq 0$

13. $\dfrac{-x^2}{2x-3}$; $x \neq 1$, $x \neq \dfrac{3}{2}$

14. $\dfrac{x^2+5x}{x+4}$; $x \neq 4$, $x \neq -4$

15. $\dfrac{x-4}{2x+1}$; $x \neq -1$, $x \neq -\dfrac{1}{2}$

16. $\dfrac{3}{x+5}$; $x \neq 3$, $x \neq -5$

17. $2x - 2$

18. $\dfrac{x-1}{x+2}$

19. $\dfrac{x^2}{2}$

20. $\dfrac{x+2}{x+3}$

21. $15x^3y^6$

22. $(x-1)(x+2)(x-3)$

23. $\dfrac{6x-8}{x+4}$

24. $\dfrac{-2x+14}{2x-5}$

25. $\dfrac{2x^2+7x+4}{x^2-x-12}$

26. $\dfrac{2x^2-5x-7}{x^2-3x-18}$