

Name _____ Date _____ Hour _____

If the following is a polynomial function, then state its degree and leading coefficient. If it is not, then state this fact.

1) $f(x) = 18x^7 + 6x + 2$

- A) Degree: 8; leading coefficient: 18
C) Not a polynomial function.

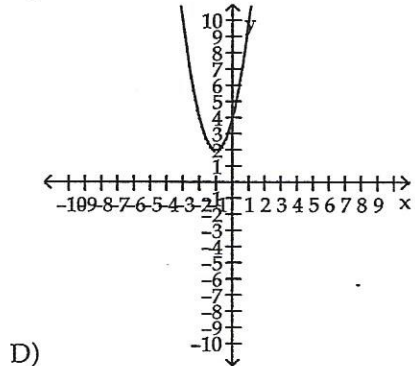
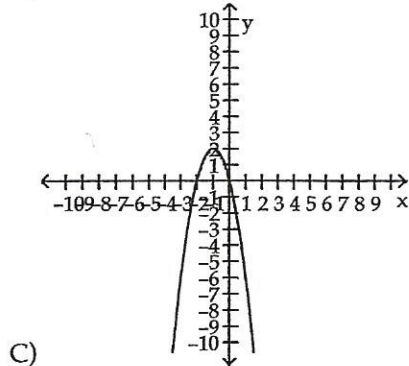
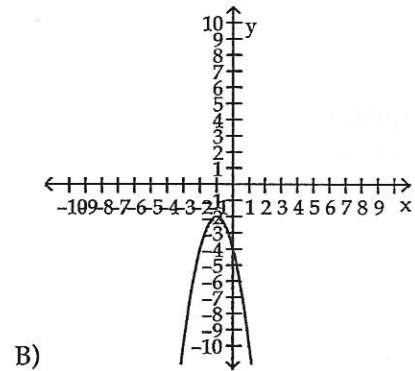
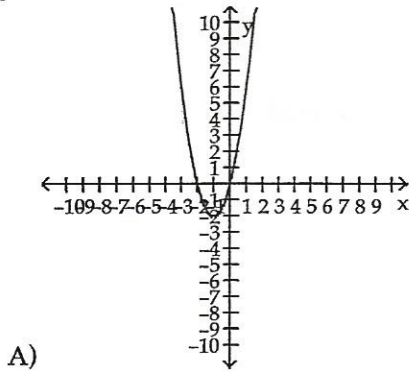
- B) Degree: 7; leading coefficient: 18
D) Degree: 18; leading coefficient: 7

Write an equation for the linear function f satisfying the given conditions.

2) $f(2) = 5$ and $f(0) = 8$

Match the equation to the correct graph.

3) $y = 2(x + 1)^2 - 2$



Find the vertex of the graph of the function.

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

A) $(-5, 0)$

B) $(3, -5)$

C) $(0, 3)$

D) $(-5, 3)$

5) $f(x) = 4x^2 - 32x + 67$

A) $(-2, -3)$

B) $(-3, 3)$

C) $(4, 3)$

D) $(-3, -2)$

Find the axis of the graph of the function.

6) $f(x) = (x + 4)^2 + 4$

A) $x = 0$

B) $x = 4$

C) $x = -4$

D) $y = -4$

7) $y = 2x^2 - 16x + 40$

A) $x = -7$

B) $x = 4$

C) $x = 0$

D) $x = 8$

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

8) Vertex $(5, 5)$, point $(3, 13)$

A) $P(x) = 2x^2 - 20x + 55$

B) $P(x) = 2x^2 - 5x + 5$

C) $P(x) = 3x^2 - 20x + 55$

D) $P(x) = -2x^2 - 20x + 5$

Determine if the function is a power function (given that π represents a constant). If it is, then state the power and constant of variation.

9) $f(x) = \frac{2}{5}x^2$

A) Power is 2; constant of variation is 2

B) Not a power function

C) Power is 2; constant of variation is $\frac{2}{5}$

D) Power is $\frac{2}{5}$; constant of variation is 2

10) $f(x) = 8 \cdot 5^x$

- A) Power is x ; constant of variation is 40
 C) Not a power function

- B) Power is x ; constant of variation is 8
 D) Power is 5; constant of variation is 8

11) $S = 4\pi r^2$

- A) Not a power function
 C) Power is 2; constant of variation is 4

- B) Power is 2; constant of variation is 4π
 D) Power is 4π ; constant of variation is 2

12) $f(x) = 0 \cdot x^2$

- A) Power is 2; constant of variation is 1
 C) Power is 0; constant of variation is 2

- B) Power is 2; constant of variation is 0
 D) Not a power function

Determine if the function is a monomial function (given that c , k , and π represent constants). If it is, state the degree and leading coefficient.

13) $f(x) = 3 \cdot x^{-8}$

- A) Degree is -8 ; leading coefficient is 3
 C) Degree is 8; leading coefficient is 3

- B) Degree is 3; leading coefficient is -8
 D) Not a monomial function

Write the statement as a power function equation. Use k as the constant of variation.

14) The area of an equilateral triangle varies directly as the square of the side s .

A) $A = \frac{s^2}{k}$

B) $A = k^2s$

C) $A = ks^2$

D) $A = \frac{k}{s^2}$

15) The surface area of a sphere S varies directly as the square of its radius r .

A) $S = k^2r$

B) $S = kr^2$

C) $S = \frac{r^2}{k}$

D) $S = \frac{k}{r^2}$

16) The cost c of a turkey varies directly as its weight w .

A) $c = kw$

B) $c = kw^2$

C) $c = \frac{w}{k}$

D) $c = \frac{k}{w}$

Write a sentence that expresses the relationship in the formula, using the language of variation or proportion.

17) $r = d/t$, where r is the rate by which distance d is covered in time t

18) $I = PRT$, where I is the simple interest on a principal of P dollars at a rate of interest R per year

Describe how to obtain the graph of the given monomial function from the graph of $g(x) = x^n$.

19) $f(x) = 8x^3$

A) Vertically stretch by a factor of 8, and then reflect across x -axis

B) Vertically stretch by a factor of 8

C) Horizontally stretch by a factor of 8

D) Horizontally stretch by a factor of 8, and then reflect across x -axis

20) $f(x) = \frac{1}{4}x^8$

A) Horizontally shrink by a factor of $\frac{1}{4}$

B) Vertically shrink by a factor of $\frac{1}{4}$, and then reflect across x -axis

C) Vertically shrink by a factor of $\frac{1}{4}$, and then reflect across y -axis

D) Vertically shrink by a factor of $\frac{1}{4}$