

Practice Assignment

Final Exam Review: Solving Equations and Inequalities

a. $4x + 31 = -67 - 3x$
 $+3x - 31 \quad -31 + 3x$

$7x = -98$

$x = 7$

b. $\frac{-6x - 3}{-3} = (17)3$

$-6x - 3 = 51$
 $+3 +3$
 $-6x = 54$

$x = -9$

c. $-2x + 2 - 3 \leq 9$

$-2x - 1 \leq 9$

$+1 +1$

$-2x \leq 10$

$x \geq -5$

divided by neg
flip inequality

Determine if each equation below represents a linear, quadratic or exponential function:

1. $f(x) = 3x + 2$

2. $y = 3^x$

3. $y = 7^2$

4. $f(x) = \frac{1}{2}(2)^x + 1$

5. $y = x^2$

exp=1 → linear

exp=x
exponential

y=49
Constant

exp=x
exponential

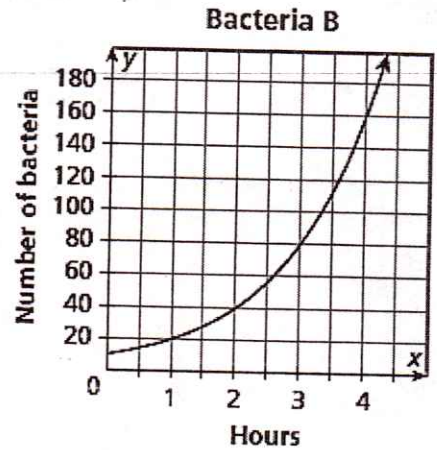
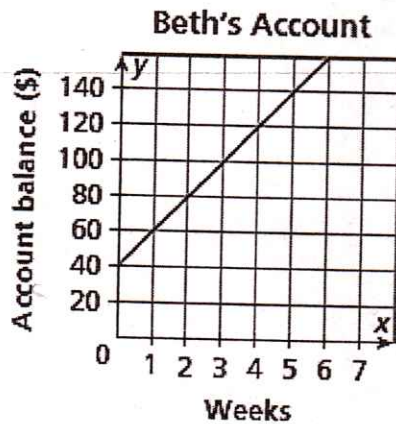
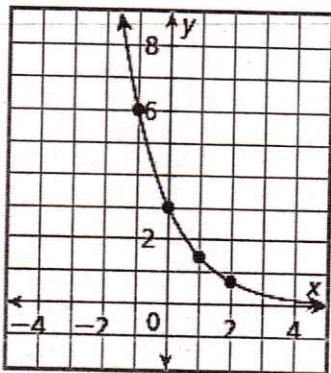
exp=2
quad

Determine if each graph represents a linear, quadratic or exponential function:

5. exponential

6. Linear

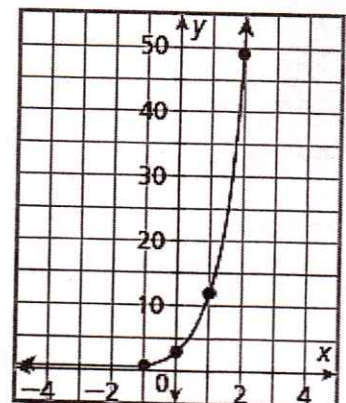
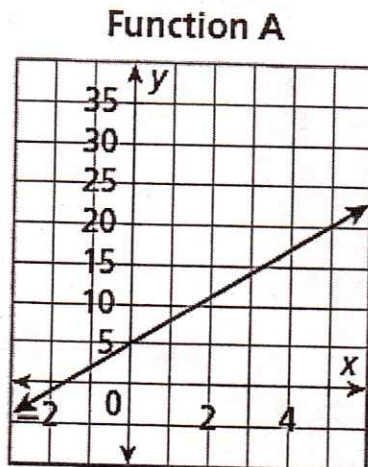
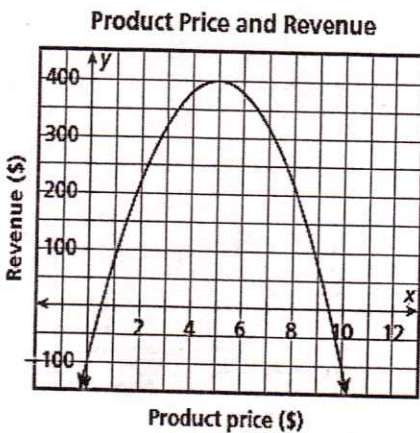
7. exponential



8. Quadratic

9. Linear

10. exponential



Determine if each sets of ordered pairs or tables represent a linear, quadratic or exponential function:

11. _____

| Weeks | 0 | 1 | 2 | 3 |
|----------------------|-----|-----|-----|-----|
| Account Balance (\$) | 425 | 375 | 325 | 255 |

-50 -50 -70

12. exponential

| Time (h) | 0 | 1 | 2 | 3 |
|----------|----|----|----|----|
| Bacteria | 10 | 20 | 40 | 80 |

•2 •2 •2

13. quadratic

| Height of Bridge Suspension Cables | |
|------------------------------------|---------------------|
| Cable's Distance from Tower (ft) | Cable's Height (ft) |
| 0 | 400 |
| 100 | 256 |
| 200 | 144 |
| 300 | 64 |

-144
-112
-80
+32
+32

14. exponential

| Ladybug Population | |
|--------------------|----------|
| Time (mo) | Ladybugs |
| 0 | 10 |
| 1 | 30 |
| 2 | 90 |
| 3 | 270 |

•3
•3
•3

15. quadratic

{(-4, 0), (-3, -5), (-2, -8), (-1, -9), (0, -8), (1, -5)}

| | |
|----|----|
| -4 | 0 |
| -3 | -5 |
| -2 | -8 |
| -1 | -9 |
| 0 | -8 |
| 1 | -5 |

← vertex

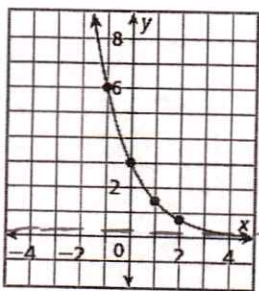
16. exponential

{(-2, 8), (-1, 4), (0, 2), (1, 1), (2, 0.5)}

| | |
|----|-----|
| -2 | 8 |
| -1 | 4 |
| 0 | 2 |
| 1 | 1 |
| 2 | 0.5 |

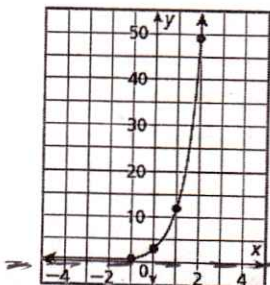
Name the asymptote for each graph:

17.



$y=0$

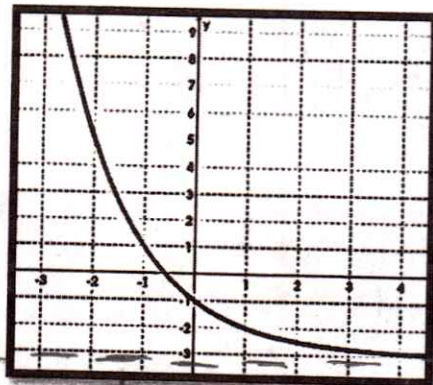
18.



$y=0$

2

19.



$y=-3$

Evaluate each exponential function for the stated value.

1. $f(x) = \frac{1}{3}(6)^x; x = 2$

$f(2) = \frac{1}{3}(6)^2$

$f(2) = 12$

2. $f(n) = 10(2)^n; f(-2)$

$f(-2) = 10(2)^{-2}$

$f(-2) = \frac{5}{2}$

3. $y = 4 \cdot 2^x; x = 4$

$y = 4(2)^4$

$y = 64$

Answer the following word problems:

4. If a basketball is bounced from a height of 20 feet, the function $f(x) = 20(0.9)^x$ gives the height of the ball in feet of each bounce, where x is the bounce number. What will be the height of the 6th bounce? Round your answer to the nearest tenth of a foot.

$f(6) = 20(0.9)^6$

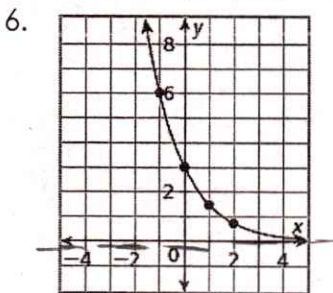
$f(6) = 10.6 \text{ ft}$

5. Suppose the depth of a lake can be described by the function $y = 334(0.976)^x$, where x represents the number of weeks from today. Today, the depth of the lake is 334 ft. What will be the depth in 6 weeks? Round your answer to the nearest whole number.

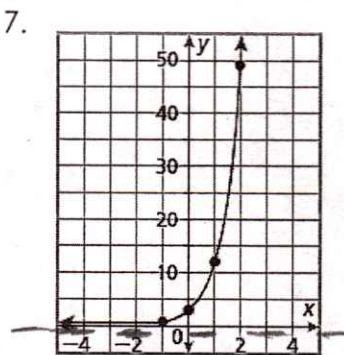
$y = 334(0.976)^6$

$y = 289 \text{ weeks}$

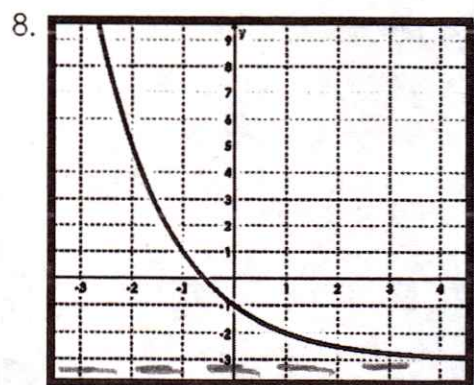
Name the asymptote for each graph:



$y = 0$



$y = 0$



$y = -3$

Directions: Decide whether each of the following is an example of exponential growth (increase) or decay (decrease) and explain why. Then state the y-intercept.

9. $y = 5^x$

$b = 5$
growth

y-int: (0, 1)

10. $y = \left(\frac{1}{2}\right)^x$

$b = \frac{1}{2}$
decay

y-int: (0, 1)

11. $y = -3^x$

$b = 3$
growth

y-int: (0, 1)

12. $y = 2\left(\frac{4}{3}\right)^x$

$b = \frac{4}{3}$
growth

y-int: (0, 2)

↳ plug 0 in for x

Graph the functions. Then state the y-intercept and asymptote.

1. $f(x) = 3^x$

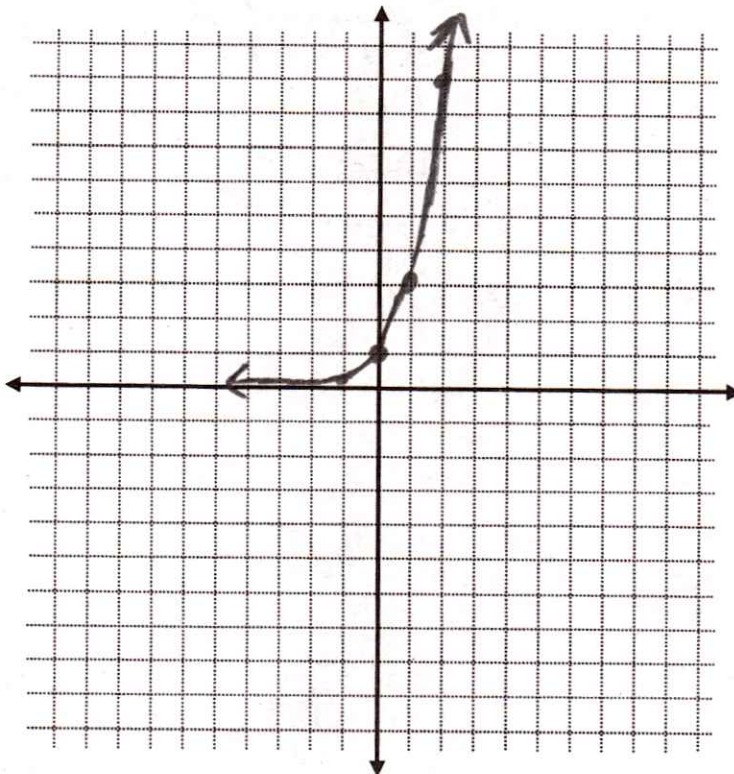
| x | y |
|----|----|
| -1 | .3 |
| 0 | 1 |
| 1 | 3 |
| 2 | 9 |
| 3 | 27 |

y-intercept:

$(0, 1)$

asymptote:

$y = 0$



2. $f(x) = 0.5^x$

| x | y |
|----|----|
| -3 | 8 |
| -2 | 4 |
| -1 | 2 |
| 0 | 1 |
| 1 | .5 |

y-intercept:

$(0, 1)$

asymptote:

$y = 0$

