§ 2.3

10. a) Linear function b/c $m = \frac{\Delta y}{\Delta x} = \frac{1}{2}$

$y = \frac{1}{2}x - 1$

b) Exponential b/c the y values are being multiplied by $\frac{1}{4}$.

$y = a_0 \cdot b^x$

$y = 12 \cdot \frac{1}{4}^x$

c) Neither

d) Exponential b/c the y values are being multiplied by 3.

$y = -2 \cdot 3^x$

11. a) Yes, because the car's value is being multiplied by 0.8 each year.

b) 4 years = $8192

5 years = $6553.20

c) $V(t) = 20000\ (0.8)^t$

d) 1- Continue the pattern of the table up to 10 years

2- Plug in $t = 10$ to our formula in part c.

12. a) Parent: $y = 3^x$

$g(x) = 3^{x+1} - 2$

Shifted Left 1 & Down 2

D: $(-\infty, \infty)$ R: $(-2, \infty)$

Asymptote: $y = -2$

b) Parent: $y = \frac{1}{4}^x$

$g(x) = 3\left(\frac{1}{4}\right)^{x-2} + 1$

- Stretched vertically by a factor of 3
- Shifted right 2 & up 1

D: $(-\infty, \infty)$ R: $(1, \infty)$

Asymptote: $y = 1$

Check graphs on your calculator

c) Parent: $y = 4^x$

$g(x) = -3(4)^{x-1}$

- Stretched vertically by a factor of 3
- Reflected over the x axis
- Shifted right 1

D: $(-\infty, \infty)$ R: $(-\infty, 0)$

Asymptote: $y = 0$