

$$1) f(x) = \frac{3x-2}{5}$$

$$x = \frac{3y-2}{5}$$

$$5x = 3y-2$$

$$+2 \quad +2$$

$$\frac{5x+2}{3} = \frac{3y}{3}$$

$$f^{-1}(x) = \frac{5x+2}{3}$$

$$2) f(x) = \frac{4x+9}{3+2x}$$

$$x = \frac{4y+9}{3+2y}$$

$$\frac{3x+2xy}{-3x} = \frac{4y+9}{-4y-3x}$$

$$2xy-4y = 9-3x$$

$$y(2x-4) = 9-3x$$

$$f^{-1}(x) = \frac{9-3x}{2x-4}$$

$$3) f(x) = \frac{5x+14}{7+2x}$$

$$x = \frac{5y+14}{7+2y}$$

$$x(7+2y) = 5y+14$$

$$2xy-5y = 14-7x$$

$$y(2x-5) = 14-7x$$

$$f^{-1}(x) = \frac{14-7x}{2x-5}$$

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

$$x = 4^{2+6y}$$

$$\log_4(x) = 2+6y$$

$$\log_4(x)-2 = 6y$$

$$f^{-1}(x) = \frac{\log_4(x)-2}{6}$$

$$5) f(x) = 8^{6-3x}$$

$$x = 8^{6-3y}$$

$$\log_8(x) = 6-3y$$

$$\log_8(x)-6 = -3y$$

$$f^{-1}(x) = \frac{\log_8(x)-6}{-3}$$

$$6) \left| \frac{\log(x)}{\log(402)} \right|$$

$$7) \left| \frac{\log(x+8)}{\log(7)} \right|$$

$$8) \left| \frac{\ln(x)}{\ln(12)} \right|$$

$$g(x) = 3\ln(x+6)-4$$

10) • horizontal translation
left 6 units

• vertical scale w/ factor 3

• vertical trans. down 4.

$$11) g(x) = \ln(e^6) + \ln(x) + 4$$

$$g(x) = 6 + \ln(x) + 4$$

• vertical trans. up 10.

$$12) g(x) = \log_6(x+2)$$

$$g(x) = \frac{\ln(x+2)}{\ln(6)}$$

$$g(x) = \frac{1}{\ln(6)} \cdot \ln(x+2)$$

horizontal translation
left 2

vertical scale w/ a
factor of $\frac{1}{\ln(6)}$

$$13) g(x) = \log_2(8x) + 3$$

$$g(x) = \log_2(8) + \log_2(x) + 3$$

$$g(x) = 3 + \log_2(x) + 3$$

$$g(x) = 6 + \log_2(x)$$

Vertical translation
up 6.

$$14) g(x) = -4 + \log_4(x)$$

$$g(x) = -4 + \frac{\log_2(x)}{\log_2(4)}$$

$$g(x) = -4 + \frac{\log_2(x)}{2}$$

$$g(x) = -4 + \frac{1}{2} \cdot \log_2(x)$$

vertical scale
w/ a factor of $\frac{1}{2}$

vertical trans
down 4 units.