

# HW 48

$$\begin{aligned}
 1. \quad a(x) &= 4x + 16 \\
 y &= 4x + 16 \\
 x &= 4y + 16 \\
 x - 16 &= 4y \\
 \frac{x - 16}{4} &= y
 \end{aligned}$$

$$\boxed{\frac{1}{4}x - 4 = a^{-1}(x)}$$

$$\text{or } \boxed{a^{-1}(x) = \frac{x-16}{4}}$$

$$2. \quad b(x) = \frac{7x + 18}{2}$$

$$y = \frac{7x + 18}{2}$$

$$x = \frac{7y + 18}{2}$$

$$2x = 7y + 18$$

$$2x - 18 = 7y$$

$$\frac{2x - 18}{7} = y$$

$$\boxed{b^{-1}(x) = \frac{2x - 18}{7}}$$

$$\text{or } \boxed{b^{-1}(x) = \frac{2}{7}x - \frac{18}{7}}$$

$$3. \quad c(x) = -\frac{1}{3}x - \frac{5}{3}$$

$$x = -\frac{1}{3}y - \frac{5}{3}$$

$$3 \cdot y + 5 = -\frac{1}{3}y \cdot 3$$

$$\frac{3x + 5}{-1} = \frac{-y}{-1}$$

$$-3x - 5 = y$$

$$\boxed{c^{-1}(x) = -3x - 5}$$

$$4. \quad d(x) = -\frac{2}{x+1}$$

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

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

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

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

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

$$\boxed{d^{-1}(x) = \frac{-2}{x} - 1}$$

$$5. \quad f(x) = \sqrt[3]{x} - 3$$

$$y = \sqrt[3]{x} - 3$$

$$x = \sqrt[3]{y} - 3$$

$$x + 3 = y^{1/3}$$

$$(x+3)^3 = y$$

$$\boxed{f^{-1}(x) = (x+3)^3}$$

$$6. \quad g(x) = \frac{2}{5}x - 3$$

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

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

$$\frac{5}{2}(x+3) = \left(\frac{2}{5}y\right)^{5/2}$$

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

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

# 7-12: see second page  
to solve flip graph  
over  $y=x$  line.

**P 283**

$$1. \quad (-3, -2), (-10), (2, 2), (6, 4)$$

$$2. \quad g(t) = 5 + 2t$$

$$y = 5 + 2t$$

$$t = \frac{y - 5}{2}$$

$$t - 5 = 2y$$

$$\frac{t - 5}{2} = y \rightarrow g^{-1}(t) = \frac{t - 5}{2}$$

$$a) \quad g(2) = 5 + 2(2) = 9$$

$$b) \quad g^{-1}(9) = \frac{9 - 5}{2} = 2$$

$$c) \quad g^{-1}(20) = \frac{20 - 5}{2} = 15/2$$

3. © if you look at  
some pts & switch  $x$  &  $y$   
you can see which  
one.

4. a & e

b & d

c & g

f & h

$$y = 2 - \frac{4}{x}$$

$$y - 2 = -\frac{4}{x}$$