

$$1) f(g(x)) = 5\left(\frac{x-3}{5}\right) + 3 = x \text{ and}$$

$$g(f(x)) = \frac{5x+3-3}{5} = x$$

Ch 5h
review
answers

$$f(g(x)) = g(f(x)) = x$$

$$2) f'(x) = x^4 + 10$$

$$0 = x^4 + 10$$

no crit. #'s

← + → f'

Since $f' > 0$ for all x ,
 $f(x)$ is monotonic

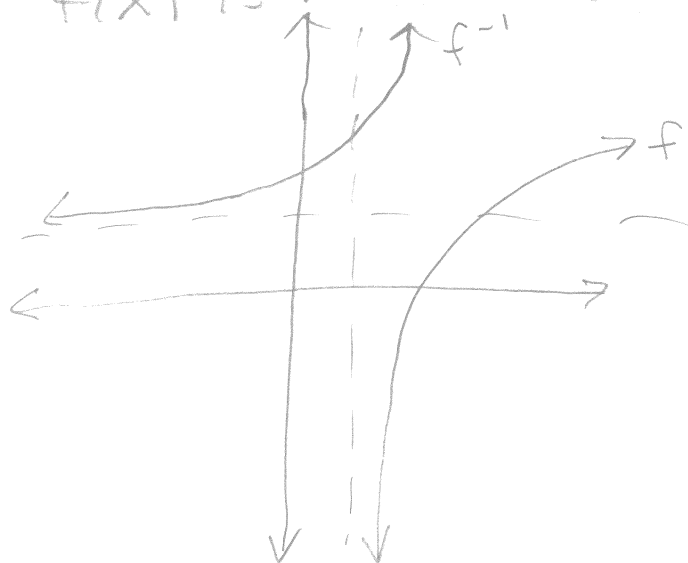
$$3) f(x) = \ln(x-1)$$

$$x = \ln(y-1)$$

$$e^x = y-1$$

$$e^x + 1 = y$$

$$f^{-1}(x) = e^x + 1$$



$$4) g(6, -1) \quad 6 = x^7 + 2x + 9$$

$$f^{-1}(-1, 6) \quad x = \underline{\underline{-1}}$$

$$f'(x) = 7x^6 + 2$$

$$f'(-1) = 9$$

$$g'(6) = \frac{1}{9}$$

$$5) f^{-1}(2, \quad)$$

$$f(\quad, 2)$$

$$2 = \sqrt{x^3 + x^2 + x + 1}$$

$$1 = x$$

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

$$f'(1) = \frac{1}{2} \cdot \frac{1}{2} \cdot 6 = 3/2$$

$$(f^{-1})'(2) = 2/3$$

$$6) f^{-1}(2, 1) \quad f'(x) = \frac{-6}{(x+1)^2}$$

$$f(1, 2)$$

$$f'(1) = -1/2$$

$$(f^{-1})'(2) = -2$$

$$7.) f(1, 3)$$

$$f^{-1}(3, 1)$$

$$f'(1) = \frac{1}{2}$$

$$H'(3) = 2$$

$$8.) g^{-1}(2, 3)$$

$$g(3, 2) \quad g'(3) = 4$$

$$y - 3 = \frac{1}{4}(x - 2)$$

$$9.) -\pi/3$$

$$10.) 5\pi/6$$

$$11.) \pi/4$$

$$12.) 2/\sqrt{5}$$

$$13.) \sqrt{x^2 - 1}$$

$$14.) f'(x) = \frac{-3x^2}{\sqrt{1-x^6}}$$

$$15.) f'(x) = \frac{2}{|x|\sqrt{x^2-4}}$$

$$16.) f'(x) = \frac{-2}{|2x|\sqrt{4x^2-1}} = \frac{-1}{|x|\sqrt{4x^2-1}}$$

$$17.) y - \frac{3\pi}{4} = -\frac{1}{10}(x+5)$$

$$18.) \pi/12$$

$$19.) 5\pi/6$$

$$20.) \frac{7}{10} \arctan \frac{x^2}{5} + C$$

$$21.) 4 \arcsin \frac{x-4}{4} + C$$

$$22.) \frac{1}{2} \arcsin \frac{e^{2x}}{4} + C$$

$$23.) \frac{1}{2} \ln 2 + \frac{\pi}{4}$$

$$24.) -\sqrt{3} + 2 + \frac{\pi}{6}$$

$$25.) \pi/4$$

$$26.) \frac{1}{15} \arctan \frac{x-5}{\sqrt{5}} + C$$

$$27.) \frac{1}{2} \ln |17|$$