

2.4

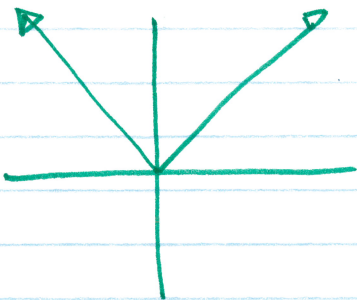
- (7) $Q_1 (10, 225)$
 $Q_2 (14, 375)$
 $Q_3 (16.5, 475)$
 $Q_4 (18, 550)$
 $P (20, 650)$

$PQ_1 = \frac{650-225}{20-10} = 42.5$
 $PQ_2 = \frac{650-375}{20-14} = 45.83$
 $PQ_3 = \frac{650-475}{20-16.5} = 50$
 $PQ_4 = \frac{650-550}{20-18} = 50$

(13) $f(x) = |x|$

$f(x) = \begin{cases} -x & , x \leq 0 \\ x & , x > 0 \end{cases}$

x	y
-3	3
-2	2
-1	1



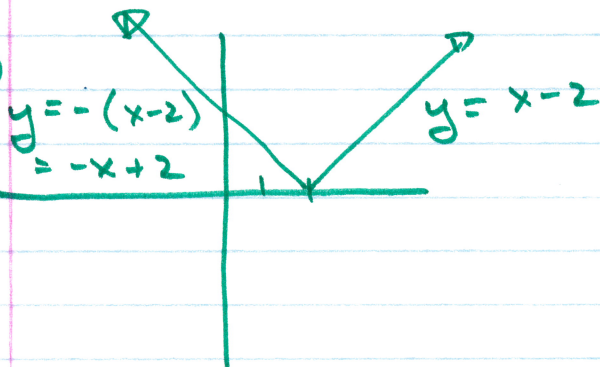
(a) $\lim_{h \rightarrow 0} \frac{(2+h) - 2}{h}$

$\lim_{h \rightarrow 0} \frac{h}{h} = \lim_{h \rightarrow 0} 1 = 1$

$\frac{x}{-1} = -x$
 (b) $\lim_{h \rightarrow 0} \frac{-(-3+h) - 3}{h}$

$\lim_{h \rightarrow 0} \frac{-h - 3 - 3}{h} = \lim_{h \rightarrow 0} \frac{-h}{h} = \lim_{h \rightarrow 0} -1 = -1$

(14)



(21)

$y = \frac{1}{a \cdot x - 1}$
 $\lim_{h \rightarrow 0} \frac{\frac{1}{(a+h)-1} - \frac{1}{a-1}}{h} = \lim_{h \rightarrow 0} \frac{[a-1] - [(a+h)-1]}{[(a+h)-1][a-1]h}$

$\lim_{h \rightarrow 0} \frac{a-1-a-h+1}{(a+h-1)(a-1)h} = \lim_{h \rightarrow 0} \frac{-h}{(a+h-1)(a-1)h} \cdot \frac{1}{h} = \lim_{h \rightarrow 0} \frac{-1}{(a+h-1)(a-1)}$

$\frac{-1}{(a-1)(a-1)} = \frac{-1}{(a-1)^2}$

2.4

(25)

$$A = \pi r^2$$

$$\lim_{h \rightarrow 0} \frac{\pi(3+h)^2 - \pi(3)^2}{h} = \lim_{h \rightarrow 0} \frac{\pi(9+6h+h^2) - 9\pi}{h}$$

$$= \lim_{h \rightarrow 0} \frac{\cancel{9\pi} + 6\pi h + \pi h^2 - \cancel{9\pi}}{h} = \lim_{h \rightarrow 0} \frac{\cancel{h}(6\pi + \pi h)}{\cancel{h}}$$

$$= \lim_{h \rightarrow 0} 6\pi + \pi h = \boxed{6\pi}$$