$$f(x) = x^2$$

17. a) $(3, 9)$ $y = 6x - 9$
b) $(-1, 1)$ $y = -2x - 1$
c) $(10, 100)$ $y = 20x - 100$

19) $f(x) = 2/x$
a) $(1, 2)$ $y = -2x + 4$
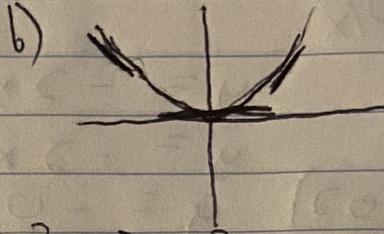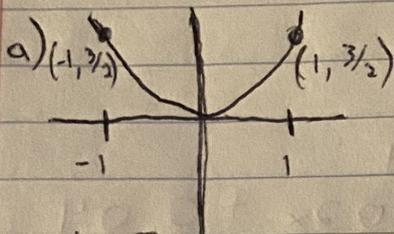b) $(-1, -2)$ $y = -2x - 4$
c) $(100, 0.02)$ $y = -0.0002x + 0.04$

25) $x_0, x_3, x_4, x_6, x_{12}$

27) x_1, x_2, x_3, x_4

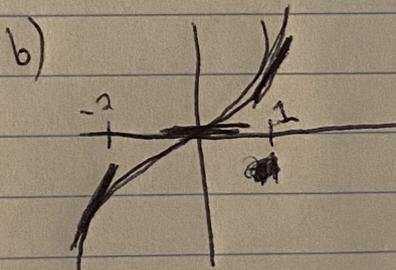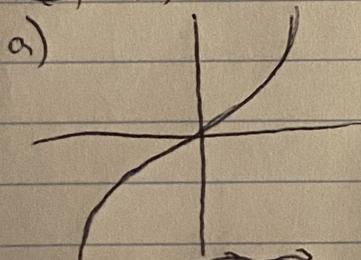1. $f(x) = \frac{3}{2}x^2$

a) (-1, 3/2) (1, 3/2)

-1   1

b)

$y' = n \cdot x^{n-1}$

c) $f'(x) = \lim\limits_{h \to 0} \dfrac{\frac{3}{2}(x+h)^2 - \frac{3}{2}x^2}{}$

$= \lim\limits_{h \to 0} \dfrac{\frac{3}{2}\left[x^2 + 2xh + h^2 - x^2\right]}{h}$

$= \lim\limits_{h \to 0} \frac{3}{2}(2x + h) = 3x$

d) $f'(-2) = -6$

$f'(0) = 0$

$f'(1) = 3$

5. $f(x) = x^3$

a)

b)

-2   1

c)

$y' = n \cdot x^{n-1}$

$f'(x) = \lim\limits_{h \to 0}\left(\dfrac{(x+h)^3 - x^3}{h}\right) = \lim\limits_{h \to 0} \dfrac{x^3 + 3x^2h + 3xh^2 + h^3 - x^3}{h}$

$= \lim\limits_{h \to 0}\left(\dfrac{3x^2h + 3xh^2 + h^3}{h}\right) = \lim\limits_{h \to 0}\left(3x^2 + 3xh + h^2\right)$

d) $f'(-2) = 3 \cdot -2^{3-1} = 3 \cdot 4 = 12$

$f'(0) = 0$

$f'(1) = 3$