

Section 3.4

14

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

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

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

$$= \frac{2x}{(x^2+1)^2}$$

$$f'(1) = \frac{2(1)}{(1^2+1)^2} = \frac{2}{4} = \frac{1}{2}$$

Section 3.4

36

$$x(t) = 2t^3 + 3t^2 - 36t + 40$$

$$\textcircled{a} \quad v(t) = x'(t) = 6t^2 + 6t - 36$$

$$\textcircled{b} \quad a(t) = v'(t) = 12t + 6$$

$$\textcircled{c} \quad x(3) - x(0) = 2(27) + 3(9) - 36(3) + 40 \\ - (2(0) + 3(0) - 36(0) + 40)$$

$$= -27$$

So the particle travelled ~~27~~ 27 units to the left.

OR \textcircled{c} Find where $v(t) = 0$.

$$6(t^2) + 6t - 36 = 0$$

$$t = -3 \text{ or } t = 2.$$

$$\text{So the answer is } |x(0) - x(2)| + |x(2) - x(3)| = 61$$

So the particle moved 61 units

There are
2 ways
of reading
this