

Lesson 2.2 - Answers

$$3. \frac{dy}{dx} = 0$$

$$5. \frac{dy}{dx} = 6x^5$$

$$9. f'(x) = \frac{1}{5x^{4/5}}$$

$$12. g'(x) = 3$$

$$15. g'(x) = 2x + 12x^2$$

$$18. f'(x) = 6x^2 - 2x + 3$$

$$21. y' = 2x + \frac{1}{2}\sin x$$

$$24. y' = \frac{-15}{8x^4} - 2\sin x$$

$$39. f'(x) = 2x - \frac{6}{x^3}$$

$$42. f'(x) = 1 - \frac{2}{x^3}$$

$$45. y' = 3x^2 + 1$$

$$48. f'(x) = \frac{1}{3x^{3/2}} + \frac{1}{5x^{4/5}}$$

$$51. f'(x) = \frac{3}{x^{1/2}} - 5\sin x$$

$$33. m=0 ; \boxed{y = -\frac{1}{2}}$$

$$36. m=0 ; \boxed{y = 0}$$

$$54. m=4 ; \boxed{y = 4x - 2}$$

57. horizontal tangent line: $m=0$

$$y' = 4x^3 - 16x = 0 \leftarrow \text{slope}$$

$\underline{(0, 2)}, \underline{(-2, -14)}, \underline{(2, -14)}$

$$60. y' = 2x = 0 \quad \underline{(0, 1)}$$

$$93. a) s(t) = -16t^2 + 136t$$

$$s' = v = -32t$$

$$b) \frac{\Delta s}{\Delta t} = -48 \text{ ft/sec}$$

$$c) t=1 \quad v = -32 \text{ ft/sec}$$

$$t=2 \quad v = -64 \text{ ft/sec}$$

$$d) t = 9.2 \text{ sec}$$

$$e) v = -294.4 \text{ ft/sec}$$

$$94. v(3) = -118 \text{ ft/sec}$$

$$\rightarrow v(2) = -86 \text{ ft/sec}$$

hint: height at $t=0 = 220$

height after falling 108 ft = ?

$$= 220 - 108 = 112 \text{ ft}$$

so: $s(t) = 112 \text{ ft}$ find
 t at 112 ft & find
 $v(t)$