

44 53 54 55

$$(44) \quad y = x^2 \tan 2x$$

$$\frac{dy}{dx} =$$

$$a = x^2$$

$$a_1 = 2x$$

$$b = \tan 2x$$

$$b_1 = 2 \sec^2 2x$$

$$2x(\tan 2x) + x^2(2 \sec^2 2x)$$

$$\textcircled{53} \quad y = \sqrt{\frac{z+1}{z-1}} = \left(\frac{z+1}{z-1}\right)^{1/2}$$

$$\frac{dy}{dz} = \frac{1}{2} \left(\frac{z+1}{z-1}\right)^{-1/2} \cdot \frac{(z-1)(1) - (z+1)(1)}{(z-1)^2}$$

$$\left(\frac{z+1}{z-1}\right)^{-1/2} \cdot \frac{-1}{(z-1)^2}$$

$$\cos^3 x = \frac{1}{3} (\cos^3 x + 3 \cos x + 7)$$

$$(84) \quad y = (\cos^3 x + 3 \cos x + 7)^9$$

$$\frac{dy}{dx} = 9 (\cos^3 x + 3 \cos x + 7)^8 \cdot (3 \cos^2 x (-\sin x) - 3 \sin x)$$

$$\textcircled{5} \quad y = \frac{\cos(1+x)}{1 + \cos x}$$

$$\frac{dy}{dx} = \frac{(1 + \cos x)(-\sin(1+x)) - \sin x \cos(1+x)}{(1 + \cos x)^2}$$

$$(43) \quad y = \sqrt{\sin x \cos x} = (\sin x \cos x)^{1/2}$$
$$y' = \frac{1}{2} (\sin x \cos x)^{-1/2} (-\sin^2 x + \cos^2 x)$$

$$g(x) = \frac{x}{\csc x} \quad \text{at } x = \pi/4$$

$$g(\pi/4) = \frac{\pi}{4\sqrt{2}} = \frac{\pi\sqrt{2}}{4}$$

$$g'(x) = \frac{\csc x \cdot 1 - x(-\csc x \cot x)}{\csc^2 x}$$

$$= \frac{\sqrt{2} + \frac{\pi}{4}(\sqrt{2} \cdot 1)}{}$$

$$y - \frac{\pi}{4\sqrt{2}} = \left(\frac{\sqrt{2} + \frac{\pi}{4}\sqrt{2}}{2} \right)^2 (x - \pi/4)$$

$$v = -ft^3 + 300 = 0$$

$$c) \quad 2t + 9 \quad t = 7$$

$$2(7) + 9 = 23 \quad \text{people by}$$

$$\textcircled{d} \quad 2t + 9 = 61$$