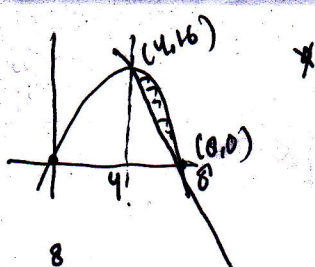


52



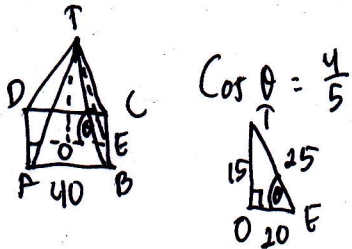
$$L = \int_4^8 -x^2 + 12x - 32 \, dx$$

$$= \left[-\frac{1}{3}x^3 + 6x^2 - 32x \right]_4^8$$

$$= \left[-\frac{512}{3} + 384 - 256 + \frac{64}{3} - 96 + 128 \right]$$

$$= \left[-\frac{448}{3} + 160 \right] = \frac{32}{3} = 10\frac{2}{3}$$

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$$\cos \theta = \frac{4}{5}$$

$$TB = \sqrt{TE^2 + BE^2}$$

$$= \sqrt{25^2 + 20^2}$$

$$= \sqrt{1025} = 5\sqrt{41}$$

54

1	4	3	2
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$$= 1 \times 4 \times 3 \times 2 = 24$$

56

$$\lim_{x \rightarrow \frac{\pi}{4}} \frac{-\sin(\frac{\pi}{4} - 2x)(-2) + \cos(\frac{\pi}{4} - 2x)(-2)}{2}$$

$$= \lim_{x \rightarrow \frac{\pi}{4}} \frac{2 \sin(\frac{\pi}{4} - 2x) - 2 \cos(\frac{\pi}{4} - 2x)}{2}$$

$$= \lim_{x \rightarrow \frac{\pi}{4}} \sin(\frac{\pi}{4} - 2x) - \cos(\frac{\pi}{4} - 2x)$$

$$= \sin(-\frac{\pi}{4}) - \cos(-\frac{\pi}{4}) = -\frac{1}{2}\sqrt{2} - \frac{1}{2}\sqrt{2} = -\sqrt{2}$$

57

$$4x + y = 5$$

$$y = 5 - 4x$$

$$m_1 = -4 = m_2$$

$$m_2 = y' = \frac{-4}{\sqrt{2-x}}$$

$$-4 = \frac{-4}{\sqrt{2-x}}$$

$$-4\sqrt{2-x} = -4$$

$$\frac{d}{dx} \left(\frac{1}{\sqrt{a^2+x^2}} \right) = \frac{d}{dx} \left((a^2+x^2)^{-\frac{1}{2}} \right) = -\frac{1}{2} (a^2+x^2)^{-\frac{3}{2}} \cdot 2x = \frac{-x}{(a^2+x^2)^{\frac{3}{2}}}$$

$$\frac{d}{dx} \left(\frac{1}{\sqrt{10+x^2}} \right) = \frac{-x}{(10+x^2)^{\frac{3}{2}}}$$

$$2 = \frac{1}{\sqrt{10+x^2}} \Rightarrow \sqrt{10+x^2} = \frac{1}{2} \Rightarrow 10+x^2 = \frac{1}{4} \Rightarrow x^2 = \frac{1}{4} - 10 = -\frac{39}{4}$$