

$$y = \frac{8^x}{x^8} + \log_7 x \dots$$

$$y' = \frac{x^8(8^x) \ln 8 - 8^x(8x^7)}{(x^8)^2} + \frac{1}{x \ln 7}$$

Jun 6-9:50 AM

$$b) y = x^{3/2} \tan\left(\frac{1}{x}\right)$$

$$y' = x^{3/2} \sec^2\left(\frac{1}{x}\right)(-x^{-2}) + \tan\left(\frac{1}{x}\right)\left(\frac{3}{2}x^{1/2}\right)$$

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$$\lim_{x \rightarrow 1} \frac{1}{\ln x} = \frac{1}{x-1} \quad \frac{0}{0} \quad \frac{0}{0}$$

$$\lim_{x \rightarrow 1} \frac{x-1}{(\ln x)(x-1)} = \frac{0}{0}$$

$$\lim_{x \rightarrow 1} \frac{1 - \frac{1}{x}}{(\ln x)(1) + (x-1)\left(\frac{1}{x}\right)} = \frac{0}{0}$$

$$\lim_{x \rightarrow 1} \frac{1 - \frac{1}{x}}{\ln x + 1 - \frac{1}{x}} \quad \frac{x-1}{x} \quad \frac{x-1}{x} \frac{1}{x}$$


$$\lim_{x \rightarrow 1} \frac{x-2}{\frac{1}{x} + x-2}$$

$$\lim_{x \rightarrow 1} \frac{\frac{1}{x^2}}{\frac{1}{x} + \frac{1}{x^2}} = \frac{1}{2}$$

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$\tan(\cos^{-1} x)$

$\tan \theta = \frac{\sqrt{1-x^2}}{x}$



opp $\sqrt{1-x^2}$

$a^2 = 1^2 - x^2$

$a = \sqrt{1-x^2}$

Jun 6-10:18 AM

$$y' = -\cos \theta - 2$$

$$F(x) = -\sin \theta - 2x + C$$

Jun 6-10:22 AM

$$y = \sinh(e^x)$$

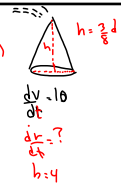
$$y' = (\cosh(e^x))(e^{2x})(2)$$

Jun 6-10:24 AM

3 a) $y = \sqrt{5-x}$ 2) $f'(1)$
 $f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$ b) $f(1,2)$
 $= \lim_{h \rightarrow 0} \frac{\sqrt{5-(x+h)} - \sqrt{5-x}}{h}$
 $= \lim_{h \rightarrow 0} \left(\frac{\sqrt{5-x-h} - \sqrt{5-x}}{h} \right) \left(\frac{\sqrt{5-x+h} + \sqrt{5-x}}{\sqrt{5-x+h} + \sqrt{5-x}} \right)$
 $\lim_{h \rightarrow 0} \frac{\cancel{5-x-h} - \cancel{5-x}}{h(\sqrt{5-x+h} + \sqrt{5-x})}$
 $\lim_{h \rightarrow 0} \frac{-h}{h(\sqrt{5-x+h} + \sqrt{5-x})}$
 $\lim_{h \rightarrow 0} \frac{-1}{\sqrt{5-x+h} + \sqrt{5-x}}$
 $= \frac{-1}{2\sqrt{5-x}}$

Jun 6-10:28 AM

$V = \frac{1}{3} \pi r^2 h$
 $V = \frac{1}{3} \pi r^2 \left(\frac{3}{4}r\right)$
 $V = \frac{1}{3} \pi \left(\frac{3}{4}r\right)^2$
 $V = \frac{1}{4} \pi r^3$
 $\frac{dV}{dt} = \frac{3}{4} \pi r^2 \frac{dr}{dt}$
 $10 = \frac{3}{4} \pi \left(\frac{16}{3}\right)^2 \frac{dr}{dt}$
 $10 = \frac{64\pi}{3} \frac{dr}{dt}$
 $\frac{dr}{dt} = \frac{10}{64\pi}$
 $\frac{dr}{dt} = 10 \cdot \frac{3}{64\pi}$
 $\frac{dr}{dt} = \frac{30}{64\pi}$
 $\frac{dr}{dt} = \frac{15}{32\pi}$



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