5. $f(x) = e^{3x} + 1$

$f'(x) = e^{3x} \cdot 3$

$f'(x) = 3e^{3x}$

$2 = 3e^{3x}$

$\frac{2}{3} = e^{3x}$

$\ln \frac{2}{3} = \ln e^{3x}$

$\ln 2 - \ln 3 = 3x$

$\frac{\ln 2 - \ln 3}{3} = x$

6. $f(x) = 3^{\pi x}$ E

$f'(x) = \ln 3 \cdot 3^{\pi x} \cdot \pi$

$f'(x) = \pi (\ln 3)(3^{\pi x})$

7. $7 = xy - e^{xy}$

$0 = x \cdot \frac{dy}{dx} + y - \left(e^{xy}\left(x\frac{dy}{dx} + y\right)\right)$

$0 = x\frac{dy}{dx} + y - xe^{xy}\frac{dy}{dx} - ye^{xy}$

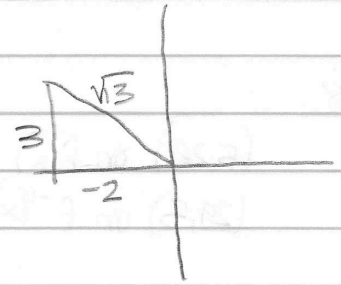
$ye^{xy} - y = \frac{dy}{dx}\left(x - xe^{xy}\right)$

$\frac{ye^{xy} - y}{x - xe^{xy}} = \frac{dy}{dx}$

$\frac{y(e^{xy} - 1)}{-x(-1 + e^{xy})} = \frac{dy}{dx}$

$\rightarrow \frac{dy}{dx} = -\frac{y}{x}$ D

8. $\sin\left[\arccos\left(\frac{-2}{\sqrt{13}}\right)\right]$

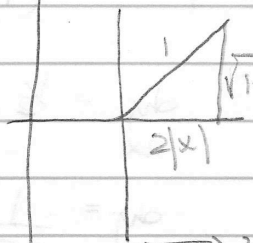


$\frac{3}{\sqrt{13}}$ B

9. $f(x) = \arcsin\sqrt{1-4x^2}$

$\sin y = \sqrt{1-4x^2}$

$\cos y \frac{dy}{dx} = \frac{1}{2}(1-4x^2)^{-\frac{1}{2}}($



$\frac{dy}{dx} = \frac{-4x}{\cos y \sqrt{1-4x^2}}$

$1^2 - \left(\sqrt{1-4x^2}\right)^2 = c^2$

$1 - (1-4x^2) = c^2$

$4x^2 = c^2$

$2|x| = c$

$\frac{dy}{dx} = \frac{-4x}{2|x|\sqrt{1-4}}$

$\frac{dy}{dx} = \frac{-2x}{|x|\sqrt{1-4x}}$

B