MAT 175 Solutions to HW 7

a) $f(x) = \ln(x^2 + 3x - 1)$

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

b) $\phi(x) = 2x e^{\sqrt{x}-1}$

$$\phi'(x) = 2e^{\sqrt{x}-1} + 2x e^{\sqrt{x}-1}\left(\frac{1}{2\sqrt{x}}\right)$$

$$= \left(2 + \sqrt{x}\right) e^{\sqrt{x}-1}$$

c) $s(t) = (t+1)\cos\left((t^2+1)^4 + e^t\right)$

$$s'(t) = 1 \cdot \cos\left((t^2+1)^4 + e^t\right) + (t+1)\left(-\sin\left((t^2+1)^4 + e^t\right)\right) \cdot \left(4(t^2+1)^3 \cdot 2t + e^t\right)$$