**Quiz 6**

Key

1. [2 pts each] Compute the derivatives of each of the following functions.

   (a) $f(x) = x \cdot e^x$
   $f'(x) = e^x + xe^x$

   (b) $s(t) = 2.2^t$
   $s'(t) = \ln(2.2) \cdot 2.2^t$

   (c) $F(x) = \pi\sqrt{9 + x^3}$

   $$F'(x) = \pi \frac{1}{2} \left(9 + 3x^3\right)^{-1/2} \cdot 9x^2$$
   $$\text{or } F'(x) = \frac{9\pi x^2}{2\sqrt{9 + 3x^3}}$$

   (d) $h(t) = e^{-t^2}$

   $h'(t) = -2te^{-t^2}$

   (e) $r(x) = (x + 14x^5)^6$
   $r'(x) = 6(x + 14x^5)^5 \cdot 14 \cdot 5 \cdot x^4 = 420x^4(x + 14x^5)^5$