

Name: _____

Quiz 14, Section 7.1, due on _____

(10 pts) Find the Laplace Transform $F(s)$ for

$$\begin{aligned} \text{(a) } f(t) = (2t - 1)^3 &= (2t)^3 + 3(2t)^2(-1) + 3(2t)(-1)^2 + (-1)^3 \\ &= 8t^3 - 12t^2 + 6t - 1 \end{aligned}$$

$$\begin{aligned} F(s) &= 8 \cdot \frac{3!}{s^4} - 12 \frac{2!}{s^3} + 6 \frac{1!}{s^2} - \frac{1}{s} \\ &= \frac{48}{s^4} - \frac{24}{s^3} + \frac{6}{s^2} - \frac{1}{s} \end{aligned}$$

(b) $f(t) = \cos 4t + \sin 6t$

$$F(s) = \frac{s}{s^2 + 16} + \frac{6}{s^2 + 36}$$