D-AD0 <u>Practice Assessment</u>

Evaluate each limit using L'hopital's Rule.

1. $\lim_{\theta \to 0} \frac{\sin 8\theta}{6\theta}$

2. $\lim_{x \to 0} \frac{e^{3x} - 2^x}{3x}$

3. $\lim_{x \to \infty} x^2 e^{-x}$

D-AD6

4. Find $f^{-1'}(23)$ if $f(x) = x^3 - 4$

5. Let f and g be inverse functions. Find $g'(3)$ if $f(x) = x^3 + 3x - 1$

D-CD5

6. Find all x-coordinates of all horizontal and vertical tangents for $-6x + x^2 + 3y^2 = -8$

D-AD5

7. Show that $\frac{d^2y}{dx^2} = \frac{-3y^2-9x^2}{y^3}$ for $3x^2 + y^2 = 12$