Math 2215 - Calculus 1
Quiz #15 - 2011.05.02
Solutions

1. Compute the following derivatives:

(a) $\dfrac{d}{dx}\left[\sin^2(x^2) - \dfrac{1}{x} + 3\right]$

$$\frac{d}{dx}\left[\sin^2(x^2) - \frac{1}{x} + 3\right] = 2\sin(x^2)\left[\frac{d}{dx}\sin(x^2)\right] + \frac{1}{x^2}$$
$$= 2\sin(x^2)\left[\cos(x^2)\frac{d}{dx}x^2\right] + \frac{1}{x^2}$$
$$= 2\sin(x^2)\left[\cos(x^2)\,2x\right] + \frac{1}{x^2}$$

(b) $\dfrac{d}{dz}\left[\cos(z^2\,f(z))\right]$

$$\frac{d}{dz}\left[\cos(z^2\,f(z))\right] = -\sin(z^2\,f(z))\frac{d}{dz}\left[z^2\,f(z)\right]$$
$$= -\sin(z^2\,f(z))\left[2z\,f(z) + z^2\,f'(z)\right]$$

2. Simplify the expression $48/2(9+3)$

$$48/2(9+3) = (48/2)\,12$$
$$= 24 \cdot 12$$
$$= 288$$