MAT 142, Quiz #3, Spring 2017 Name KEY

Instructions: Show all work. Give exact answers unless specifically asked to round.

1. Find the sum of $\sum_{i=1}^{7} 4(-3)^i$ using the geometric sum formula.

$$\sum_{i=0}^{6} 12(-3)^i$$

$$-12\left[\frac{1-(-3)^7}{1-(-3)}\right] = -12\left[\frac{2188}{4}\right] = -6564$$

2. Write $0.\overline{529}$ as a geometric sum, and use the sum to write the repeating decimal as a fraction.

$$\frac{529}{1000}\sum_{i=0}^{\infty}\left(\frac{1}{1000}\right)^n = \frac{529}{1000}\left(\frac{1}{1-\frac{1}{1000}}\right) = \frac{529}{1000}\,\frac{1}{\frac{999}{1000}} = \frac{529}{1000}\cdot\frac{1000}{999}$$

$$= \frac{529}{999}$$

3. Describe in words the transformations applied to the graph of $f(x) = |x|$ in order to obtain $g(x) = -\frac{1}{2}|x-3|+1$.

horizontal shift right three
vertical reflection
vertical compression (1/2)
vertical shift up by one