Geometric Sequences Worksheet

Determine whether each of the following sequences is arithmetic, geometric, or neither. Explain your decisions.

- 1) -4, 1, 6, 11, ...
- 2) 2, 8, 32, 128, ... 3) 1.5, 4.5, 13.5, 40.5, ...

For each of the following geometric sequences, find the common ratio. Then write the explicit formula for the sequence.

4) 10, 20, 40, 80, ...

- 5) 7, -7, 7, -7, ... 6) 3, -12, 48, -192, ...
- 7) 162, 108, 72, 48, ...
- 8) **100**, **50**, **25**, **12**.**5**, ...
- 9) Show work: What is the 14th term of the geometric sequence: 3, 9, 27, 81, ...
- 10) Show work: What is the 11th term of the geometric sequence: -2, 10, -50, 250, ...
- 11) Lidia's parents have offered her two different options to earn her allowance for a 9-week period over the summer. She can either get paid \$30 each week, or \$1 the first week, \$2 the second week, \$4 the third week, and so on.
 - a) Clearly explain if the second option forms a geometric sequence or not.
 - b) Show work and explain which option Lidia should choose.
- 12) Gabe and Erik are finding the 9^{th} term of the geometric sequence -5, 10, -20, ... Is either of them correct? Explain.

Gabe

$$r = \frac{10}{-5} = -2$$

$$a_9 = -5(-2)^{9-1}$$

$$= -5(512)$$

$$= -2560$$

Erik

$$r = \frac{10}{-5} = -2$$

$$a_9 = -5(-2)^{9-1}$$

$$= -5(-256)$$

$$= 1280$$