

Name: _____ Date: _____ Period: _____

Final Practice #2

1) Eliminate the parameter and identify the graph of the parametric curve:

a) $x = t - 2, \quad y = 1 + 2t^2$

b) $x = 3\cos t, \quad y = 3\sin t, \quad 0 \leq t \leq 2\pi$

2) Convert the polar coordinates to rectangular coordinates:

a) $\left(3, \frac{7\pi}{6}\right)$

b) $(4, -100^\circ)$

c) $(12, 300^\circ)$

3) Convert each rectangular coordinate to polar form:

a) $(-4, -4)$

b) $(-5, 12)$

Find another polar coordinate for the two points above:

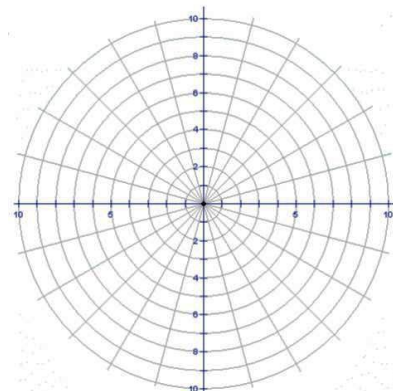
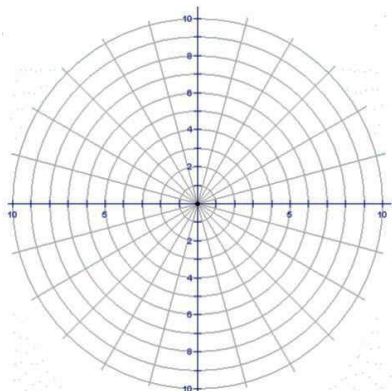
a)

b)

4) Graph each:

a) $r = -3\cos(2\theta)$

b) $r = 4\cos(3\theta)$



5) How many distinguishable permutations are there in the word ALABAMA?

6) In a beauty pageant, 50 contestants must be narrowed down to 15 finalists. In how many ways can the fifteen be selected?

7) Does the sequence converge or diverge? If it converges, identify its limit.

a) $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8}, \dots, \frac{1}{2n}$

b) $\frac{11}{1}, \frac{12}{2}, \frac{13}{3}, \frac{14}{4}, \dots, \frac{n+10}{n}$

c) $5, 10, 15, 20, \dots$

8) For each of the following arithmetic sequences find the a) common difference b) the 100th term c) a recursive rule for the nth term and an explicit rule for the nth term

i) $31, 36, 41, 46, 51, \dots$

ii) $-15, -13, -11, -9, -7, \dots$

9) Use the information from above to find the sum of the first 100 terms in the two sequences above.

a)

b)

10) For each of the following geometric sequences find the a) common ratio b) the 20th term c) a recursive rule for the nth term and an explicit rule for the nth term

i) $2, 6, 18, 54, 162, \dots$

ii) $7, \frac{7}{5}, \frac{7}{25}, \frac{7}{125}, \dots, 7\left(\frac{1}{5}\right)^{10}$

11) Use the information from above to find the sum of the first 20 terms in the two sequences above.

a)

b)

12) Determine whether the series converges. If it converges, give the sum.

a) $\sum_{k=1}^{\infty} 6(0.25)^{k-1}$

b) $\sum_{n=1}^{\infty} \left(\frac{17}{16}\right)^n$