Precalculus MAC 1140

Review for TEST–3

Find the standard form of the equation of the hyperbola satisfying the given conditions.

1) Endpoints of transverse axis: (–5, 0), (5, 0); foci: (–7, 0), (–7, 0)

Find an equation of a parabola that satisfies the given conditions.

2) Focus (10, –3), directrix y = –11

Find the equation of the hyperbola satisfying the given conditions.

3) Vertices at (0, ±6); asymptotes $y = \pm \frac{3}{7}x$

Find the standard form of the equation of the parabola using the information given.

4) Focus: (4, 6); Directrix: y = –4

Find the standard form of the equation of the ellipse satisfying the given conditions.

5) Major axis horizontal with length 20; length of minor axis = 14; center (0, 0)

Write the equation in standard form for an ellipse centered at (h, k). Identify the center and the vertices.

6) $64x^2 + y^2 - 256x + 192 = 0$

Write the equation either in the form $(y - k)^2 = a(x - h)$ or $(x - h)^2 = a(y - k)$.

7) $49y^2 + 14y - 62 = 5x$

Identify the vertices and foci.

8) $\frac{(x - 5)^2}{625} + \frac{(y + 4)^2}{400} = 1$

Find a general term a_n for the geometric sequence.

9) $a_4 = -\frac{1}{32}, a_7 = \frac{1}{2048}$

Find the sum of the arithmetic series using a formula.

10) $2 + 4 + 6 + \ldots + 1330$

Find the foci and asymptotes of the hyperbola.

11) $\frac{x^2}{16} - \frac{y^2}{9} = 1$

Write out the first five terms of the sequence.

12) $a_n = \frac{(-1)^{n+1}}{n + 1}$

Solve the system of equations.

13) $\frac{x^2}{36} - \frac{y^2}{9} = 1$

$x + y = 6$

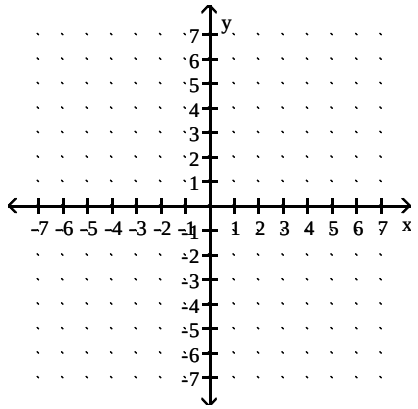
Find a general term a_n for the arithmetic sequence.

14) $a_5 = 48, a_{13} = 0$

Shade the region in the xy–plane that satisfies the system of inequalities.

15) $(x + 5)^2 + (y - 2)^2 \geq 25$

$(x - 2)^2 + (y - 4)^2 \leq 9$



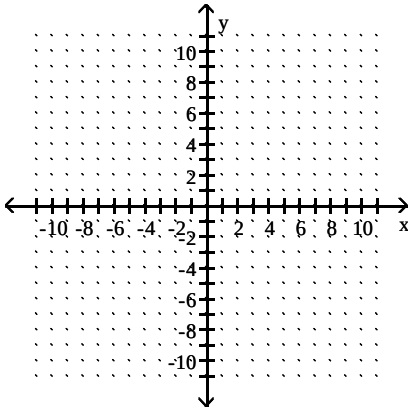
Write out the terms of the series.

16) $\sum_{k=6}^{12} \frac{k - 3}{k + 6}$

Shade the region in the xy–plane that satisfies the system of inequalities.

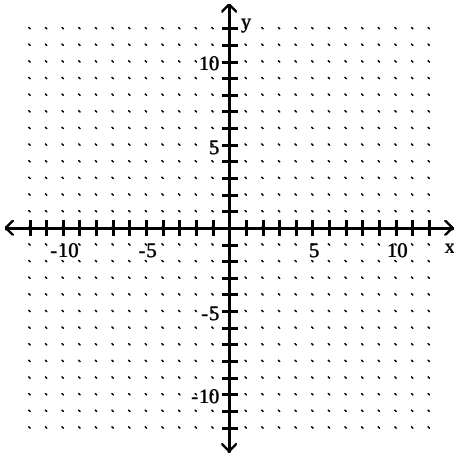
17) $\frac{x^2}{100} + \frac{y^2}{64} \leq 1$

$-x + y \geq 3$



Graph the hyperbola.

18) $\frac{(x-5)^2}{4} - \frac{(y+2)^2}{25} = 1$



Use the properties of summation notation to find the sum.

19) $\sum_{k=1}^{58} -7$

Find the sum of the series, if possible.

20) $21 + \frac{21}{2} + \frac{21}{4} + \frac{21}{8} + \ldots$

Write the sum of the geometric series as a rational number.

21) 0.08 + 0.008 + 0.0008 + 0.00008 + ...

Solve.

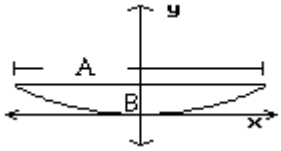
22) A rose garden has 16 bushes in one row, 13 bushes in the next row, then 10, and so on. If there are 51 bushes in the garden, in how many rows are they planted?

23) An auditorium has 20 rows with 10 seats in the first row, 12 in the second row, 14 in the third row, and so forth. How many seats are in the auditorium?

Solve the problem.

24) A radio telescope has a parabolic surface. If it is 1 m deep and 20 m wide, how far is the focus from the vertex?

A = 20 m
B = 1 m



Use the properties of summation notation to find the sum.

25) $\sum_{i=1}^{4} (3i^2 + 2i - 4)$

Compute the partial sum of the geometric series for the stated value of n. Round your answers to four decimal places.

26) $a_k = \left(-\frac{1}{5}\right)^{(k-1)}$; n= 12

Find the sum of the series, if possible.

27) $\sum_{i=1}^{\infty} (3)\left(-\frac{1}{4}\right)^{i}$

1) $\frac{x^2}{25} - \frac{y^2}{24} = 1$

2) $(x - 10)^2 = 16(y + 7)$

3) $\frac{y^2}{36} - \frac{x^2}{196} = 1$

4) $(x - 4)^2 = 20(y - 1)$

5) $\frac{x^2}{100} + \frac{y^2}{49} = 1$

6) C(2, 0); V(2, ±8); $\frac{(x - 2)^2}{1} + \frac{(y - 0)^2}{64} = 1$

7) $\left(y + \frac{1}{7}\right)^2 = \frac{5}{49}\left(x + \frac{63}{5}\right)$

8) Vertices: (–20, –4), (30, –4); Foci: (–10, –4), (20, –4)

9) $a_n = 2\left(-\frac{1}{4}\right)^{n-1}$

10) $S_{665} = 442{,}890$

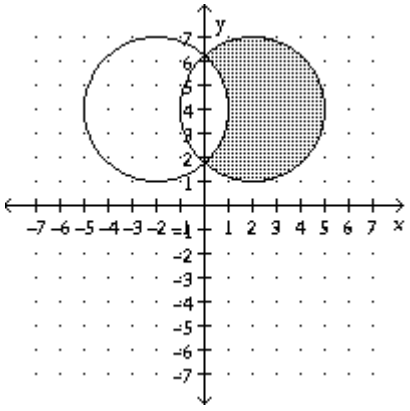
11) (–5, 0), (5, 0); $y = \frac{3}{4}x$, $y = -\frac{3}{4}x$

12) $\frac{1}{2}, -\frac{1}{3}, \frac{1}{4}, -\frac{1}{5}, \frac{1}{6}$

13) (6, 0), (10.0, –4.0)

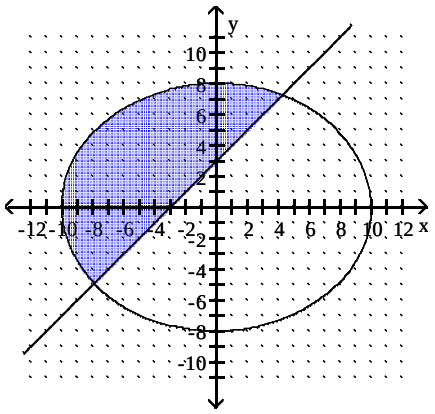
14) $a_n = -6n + 78$

15)

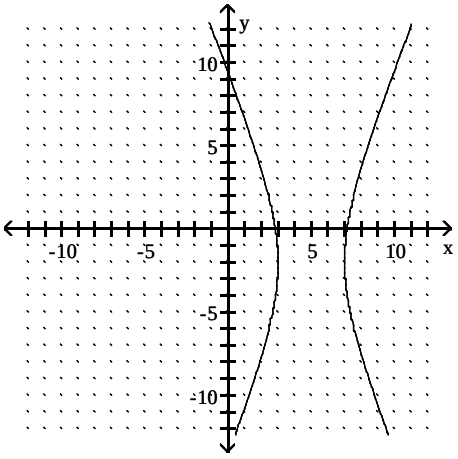


16) $\frac{2}{3} + \frac{3}{4} + \frac{4}{5} + \frac{5}{6} + \frac{6}{7}$

17)



18)



19) −406

20) 42

21) $\frac{4}{45}$

22) 6

23) 580

24) 25 m

25) 94

26) $S_{12} = 0.8333$

27) $-\frac{3}{5}$