

Name: _____ Date: 11/24/25

Test prep 5

- * 1. Find a formula for the following arithmetic sequence

3, 7, 11, 15, 19, 23, ...

- ⇒ 2. Find the n th term of the sequence, then find the 20th term

a) $a_1 = 2$ and $d = 3$

3. Find the 150th partial sum of the arithmetic sequence

$$5, 11, 27, 38, 49, \dots$$

4. Find a_1 and r for the following geometric sequence

$$3, 6, 12, 24, 48, \dots$$

5. Find the partial sum S_n for the geometric sequence with $a_1 = 2$ and $r = 3$

6. Find the sum of the following infinite geometric sequence

$$14, 7, 7/2, 7/4, \dots$$

, using a table

7. Parametric equations: graph the following parametric equations, then eliminate the parameter to find one equation

$$x = t + 1$$

$$y = \frac{t}{t+1}$$

~~8~~ 8. Find the parametric equations, given a slope of $(1/2)$ passing through $(4, -1)$

9. Find the following values below
(be sure to pay attention to your values
and their vector / scalar quantity)

$$\vec{a} = 3\vec{i} + 4\vec{j}$$

$$\vec{b} = 5\vec{i} - 2\vec{j}$$

a) $2(\vec{a} \cdot \vec{b})$

b) $3\vec{a} + \vec{b}$

10. A forklift moves 10 ft, carrying a 30 lb box across the floor. How much work is being done by the forklift?

11. Write the form of the partial fraction decomposition. Do not determine the numerical value of the coefficients

a)
$$\frac{x^2 - 3x + 5}{(x-2)^2(x+4)}$$

b)
$$\frac{x^3 - 4x^2 + 2}{(x^2+1)(x^2+2)}$$

- ★ 12. Find the vertex, focus and directrix of the parabola. Write the vertex and focus as ordered pairs and write the directrix as an equation.

$$(x+3)^2 + 8(y-6) = 0$$

- ★ 13. The point $(1, -2)$ lies on a circle whose center is at $(-3, -5)$. Write the standard form for the equation of the circle.

14. $x^2 + y^2 + 4x - 4y - 17 = 0$ is an equation of a circle. Find the standard form of the equation

15. $4x^2 + y^2 - 8x + 4y - 8 = 0$ Find the standard form of the ellipse

16. Find the standard form with the directrix at $x = -6$

17. Write the equation in standard form
(What kind of conic is this?)
 $x^2 - 4y^2 - 2x - 40y - 103 = 0$

