

Math 1050

Test 3

Practice

1. The sequence $\{a_n\}$ is defined recursively by $a_1 = -4$, $a_2 = 3$, and $a_n = -5a_{n-1} + 3a_{n-2}$. Find a_3 and a_8 .

2. Express the following sum in sigma notation:

$$8 + 11 + 14 + 17 + \dots + 176$$

3. a) Find the common difference and the 75-th term for the following arithmetic sequence.

$$27, 23, 19, 15, \dots$$

b) Find the common ratio, the 38-th term, and the sum of the following geometric sequence.

$$16, -8, 4, -2, \dots$$

4. Find the first four terms in the expansion of $(x - \frac{3}{x})^7$

5. Find the coefficient of the x^5 term in the binomial expansion of $(5 - x)^9$.

6. Reduce the following system to echelon form, and find the solution set.

$$\begin{aligned}x - 2y + z &= -5 \\ -x + 3y - 2z &= 7 \\ 3x + 4y - 2z &= 25\end{aligned}$$

7. Reduce the following system to echelon form, and find the solution set.

$$\begin{aligned}x - 4y + z &= 2 \\ y + 2z &= 5 \\ -x + 6y + 3z &= 8\end{aligned}$$

8. Find an equation for the parabola in the form $y = x^2 + bx + c$ that contains the points $(2, -7)$ and $(-3, 33)$.

9. Find all points of intersection of the line $x + y = 3$ with the parabola $y = x^2 + 5x + 1$.

10. Graph the solution to following system of inequalities:

$$\begin{aligned}y &\leq x^2 - 4 \\ x + y - 2 &\leq 0\end{aligned}$$