

DO THIS ASSIGNMENT ON YOUR OWN PAPER.

1. Find the inverse, list the domain and range for both the function and its inverse. Remember to restrict the domain if the function is not one-to-one.

a) $y = (x - 4)^2 - 3$

b) $y = 5^{x-1} - 2$

Determine the end behavior for the following functions. **(Non-Calc)**

2. $f(x) = -x^2 + 6x + 9$

3. $f(x) = \frac{1}{2}x^3 + 2x$

4. $f(x) = \frac{3}{4}(x^4 + 3x^2 + 2)$

5. $f(x) = -x^5 - 7x^2 + 10x$

Find the zeros of the functions by factoring. **(Non-Calc)**

6. $f(x) = x^4 - x^3 - 2x^2$

7. $f(x) = -2x^3 - x^2 + x$

Determine the intervals where the function is positive and where the function is negative. Write your answer in interval notation. (Hint: using the graph is the easiest way to find the answer)

8. $f(x) = x^3 - 3x$

9. $f(x) = \sqrt{x^2 - 9}$

10. $f(x) = 4x^3 - x^4$

Determine if the following functions are one-to-one.

11. $f(x) = \frac{1}{2}x - 3$

12. $f(x) = (x - 1)^2$

13. $f(x) = \frac{2}{t - 3}$

Solve the following equations.

14. $6^x - 28 = -8$

15. $2e^{-3x} - 1 = 4$

16. $\ln x - \ln 5 = 4$

17. Graph the function and give the equation of any asymptotes. $y = \frac{x^2 - x - 12}{(x - 1)(x + 3)(x + 2)}$ (holes, VA, etc.)

18. Evaluate $\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3}$

19. Solve for x

$$\frac{6}{x-6} - \frac{2}{x+3} = \frac{18}{x^2-3x-18}$$

20. Simplify $\frac{a^3 - 4a}{a^2 - 2a - 35} \div \frac{a^2 + 4a + 4}{a^2 - 5a - 14}$

21. Given $f(x) = 2x^2 - 3$ find $f'(-1)$

22. Solve $2\sqrt{x + 14} + x = 1$

23. Find the 85th term of an arithmetic sequence with $a_1 = 5$ and $d = 2$.

24. Given $f(x) = 2x + 5$ and $g(x) = x^2 + 3$ find $(f \circ g)(x)$.

25. Factor the following. **(Non-Calc)**

a. $24x^2 - 28x - 12$

b. $81x^4 - 81$

c. $2x^3 - 3x^2 - 8x + 12$

d. $x^4 - 10x^2 + 9$

e. $7x^3 + 189$

f. $5x^3 + 10x^2 - 15x - 30$

g. $14x^2 + 29x - 15$

h. $2x^8 - 512$

“What is the sun’s other job?”

Solve the following arithmetic sequences and series. The answer to each problem will match a letter that will allow you to figure out the joke.

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|---|------------------|
| 1. Find a_n in the arithmetic sequence:
-7, -3, 1, 5, ... | A: $10^7/3$ |
| 2. Find a_{26} for $1, \frac{7}{3}, \frac{11}{3}, \dots$ | I: -4, 20, 32 |
| 3. If $a_n = -84$ in the arithmetic sequence
6, 1, -4, ... , find n. | G: 440 |
| #4-5, find the missing terms for the following
arithmetic sequence. | U: 320 |
| 4. 5, _____, _____, _____, -7 | R: -4, 24, 36 |
| 5. _____, 8, _____, _____, 44 | n: $10^3/3$ |
| #6-10, find s_n for each arithmetic series described. | O: -10 |
| 6. $a_1 = 12, a_n = 100, n = 12$ | M: 7, 11, 15 |
| 7. $a_1 = 42, n = 8, d = 6$ | n: 504 |
| 8. $8 + 6 + 4 + \dots + -10$ | G: 672 |
| 9. $\sum_{n=1}^{20} (2n + 1)$ | H: 33 |
| 10. $\sum_{p=4}^{18} (2p - 3)$ | I: 19 |
| #11-12, find the first terms of each arithmetic
series. | T: -30, -27, -24 |
| 11. $a_1 = 7, a_n = 83, s_n = 900$ | L: 77 |
| 12. $n = 16, a_n = 15, s_n = -120$ | O: 2, -1, -4 |
| | K: -2, -6, -10 |
| | P: 7, 14, 21 |

11
8
4
2
10
5
6
1
12
3
7
9