

Summer Packet for Students entering Algebra III/Trig 342 and 348

Name: \_\_\_\_\_

Due: Friday August 23, 2024

This packet contains topics that you have learned in previous courses that are most important to know for this class. Please read the directions and **show your work** for each problem. Then write your answers on the answer sheet.

I. Simplify each expression

1.  $(-2xy^4)^3(8x^3)$

2.  $\frac{5x^6y}{10xy^{-2}}$

3.  $\sqrt[3]{27^2}$

4.  $\sqrt{\frac{81}{100}}$

5.  $\sqrt{\frac{x^3y^4}{8}}$

6.  $2\sqrt{32} + 3\sqrt{72}$

7.  $\sqrt{18x^5} - \sqrt{8x^3}$

8.  $\frac{1}{2-\sqrt{3}}$

9.  $(16)^{\frac{3}{2}}$

10.  $(3x^{\frac{2}{5}})(2x^{\frac{1}{2}})$

11.  $8x - [2x^2 - 5(3x - 8)]$

II. Find the product

12.  $(3x - 6)(5x + 1)$

13.  $(2x - 3)^2$

14.  $(3\sqrt{5} + 2)(3\sqrt{5} - 2)$

III. Factor completely

15.  $x^3 - x$

16.  $x(x - 3) + 4(x - 3)$

17.  $x^2 - 2x - 24$

18.  $3x^2 + 14x + 8$

19.  $x^3 - 4x^2 + 2x - 8$

IV. Rational expressions

20. Simplify:  $\frac{x^3 + 27}{x^2 + x - 6}$

21. Divide:  $\frac{4x-6}{(x-1)^2} \div \frac{2x^2-3x}{x^2+2x-3}$

22. Subtract:  $\frac{3x}{x+2} - \frac{4x^2-5}{2x^2+3x-2}$

23. Simplify the complex fraction:  $\frac{1 - \frac{9}{x^2}}{1 - \frac{1}{x} - \frac{6}{x^2}}$

V. Word Problems

24. Find three consecutive odd integers such that twice the smallest is three more than the greatest integer.
25. If Gina leaves now and drives at 66 km/hr she will reach Lancaster just in time for her appointment. On the other hand, if she has lunch first and leaves in 40 minutes, she will have to drive at 90 km/hr to make her appointment. How far away is Lancaster?

Name: \_\_\_\_\_

I Simplify each expression

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

11. \_\_\_\_\_

II. Find the product

12. \_\_\_\_\_

13. \_\_\_\_\_

14. \_\_\_\_\_

III. Factor completely

15. \_\_\_\_\_

16. \_\_\_\_\_

17. \_\_\_\_\_

18. \_\_\_\_\_

19. \_\_\_\_\_

IV. Rational expressions

20. \_\_\_\_\_

21. \_\_\_\_\_

22. \_\_\_\_\_

V. Word problems

24. \_\_\_\_\_

25. \_\_\_\_\_