

SUMMER REVIEW PACKET
ALGEBRA II/TRIG HONORS STUDENTS

NAME _____

THIS PACKET IS DUE WHEN YOU RETURN TO SCHOOL IN AUGUST. ALL WORK MUST BE DONE ON A SEPARATE PIECE OF PAPER. SHOW ALL WORK FOR THE PROBLEMS. THIS PACKET WILL BE SUBMITTED FOR POINTS.

1. Evaluate $\frac{1}{2}t - |z| + s^2$ if $t = 8$, $z = -5$, and $s = -2$.

2. Simplify: $-8(4 - (-3)) + \left(-\frac{30}{6}\right)$.

3. Simplify: $-\frac{2}{3}(6x - 9) + \frac{1}{2}(8x - 4)$.

4. Solve: $5 - 3(1 - 4k) = 26$.

5. Find three consecutive integers such that the sum of the first two is 18 less than the opposite of the greatest integer.

6. Rachel has 20 nickels, dimes, and quarters worth \$3.70. If she has twice as many quarters as dimes, how many nickels does she have?

7. What reason justifies the statement $5\left[\frac{1}{a} \cdot a + (-1)\right] = 5[1 + (-1)]$?

8. Solve: $(2n^2 - 5n - 1) - (2n^2 - 2n + 15) = -1$.

9. Simplify: $(2x^2y^3)^2 \cdot \frac{1}{2}xy^2$.

10. Multiply: $(3d - 2)(2d^2 - d - 4)$.

11. Solve $l = a + (n - 1)d$ for d .

Questions 12–15. Factor completely. If the polynomial is not factorable, write "prime."

12. $4a^2 - 8ab + 3b^2$

13. $2m^2 - 6m + mn - 3n$

14. $8 + 2x^4$

15. $4a^3 - 8a^2bc + ab^2c^2$

Express in simplest form.

16. $\frac{4a - 4}{2a - 2a^2} \div \left(\frac{2}{a}\right)^2$

17. $\frac{1}{2t + 2} + \frac{1}{t} - \frac{1}{t^2 + t}$

18. $\frac{2y + 9}{5} = \frac{5y - 6}{3}$

19. $z + \frac{z - 1}{3} = \frac{z}{2} - 2$

20. Find the slope of the line with equation $6x - 2y = 9$.

21. Find an equation in standard form for the line through points $(8, 0)$ and $(-4, 6)$.

22. Find the range of the function $f(x) = |x - 2|$ with domain $\{-2, -1, 0\}$.

23. Find the greatest value of the function $g: x \rightarrow 2 - 6x - x^2$.

24. Solve by the substitution method:

$$2x + y = 2$$

$$5x + 3y = 3$$

25. Solve: $4a + 3b = 11$
 $3a + 2b = 7$

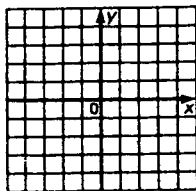
26. Solve: $7 - \frac{5}{2}k < -3$.

27. Solve: $|2 - m| > 3$.

28. Graph the solution set using the diagram shown.

$$x + y < 4$$

$$4x - 3y \leq 9$$



Simplify.

29. $\frac{1}{2} \sqrt{720}$

30. $\frac{\sqrt{2}}{\sqrt{18}} \cdot \sqrt{\frac{1}{3}}$

31. $\frac{6}{\sqrt{7} - 2}$

32. $(2 - 3\sqrt{5})^2$

Solve.

33. $\sqrt{3x - 2} + 1 = 8$

34. $(2y - 1)^2 = 75$

35. $a^2 + 10a = -3$

36. $5r = 1 + 2r^2$

37. Simplify the expression $\frac{5x^3y^{-1}}{x^{-2}y^2} \cdot \frac{(5x^2y)^{-1}}{xy^{-1}}$.

38. Evaluate $(a^3b^2)^2$ when $a = -1$ and $b = -2$.

39. Graph: $y = -x^2 + 3x - 2$

40. Solve: $x^3 - 4x^2 - 12x = 0$

41. Solve: $\frac{x}{x^2 - 81} + \frac{9}{x - 9} = \frac{1}{x + 9}$

42. Simplify: $6\sqrt{7} - 2\sqrt{28} + 2\sqrt{63}$

43. Rewrite in the form $y = a(x - h)^2 + k$
by completing the square.
 $y = 4x^2 + 2x - 3$

MULTIPLE CHOICE: All work must be shown for full credit

1. Evaluate $(a + b)^3 - \frac{c + 4}{b}$ if $a = -5$, $b = 3$, and $c = -22$.

- A. 28 B. 14 C. 2 D. -2 E. -14

2. Simplify: $\frac{1}{2}(6a - 8b) - 2(-a + 3)$.

- A. $a - 4b - 6$ B. $a - 4b + 6$ C. $a - 10b$

- D. $5a - 10b$ E. $5a - 4b - 6$

3. Solve: $3 - 6n = 3(2n - 1)$

- A. $\{0\}$ B. $\{\frac{1}{2}\}$ C. $\{-1\}$ D. \emptyset E. $\{\text{all real numbers}\}$

4. Multiply: $(k - 3)(3k^2 - 4k - 1)$.

A. $-6k^3 + 8k^2 + 2k$

B. $3k^3 + 5k^2 - 13k - 3$

C. $3k^3 - 13k^2 + 11k + 3$

D. $3k^2 - 3k - 4$

E. $3k^3 - 13k^2 - 13k - 3$

5. Simplify: $(-20r^4s^3 - 8r^3s^4 + r^2s) \div (-4r^2s)$.

A. $5r^2s^2 + 2rs^3 - 4$

B. $-5r^2s^2 - 2rs^3 + \frac{1}{4}$

C. $80r^6s^4 + 32r^5s^5 - 4r^4s^2$

D. $5r^2s^2 - 8r^3s^4 + r^2s$

E. $5r^2s^2 + 2rs^3 - \frac{1}{4}$

Solve: $6r^3 + 7r^2 = 3r$.

A. $\{\frac{1}{3}\}$

B. $\{\frac{1}{3}, -\frac{3}{2}\}$

C. $\{\frac{1}{3}, 0\}$

D. $\{0\}$

E. $\{0, \frac{1}{3}, -\frac{3}{2}\}$

7. There are three consecutive integers such that the square of the largest equals the square of the sum of the other two. Find the sum of the three integers.

A. 0

B. 6

C. 12

D. 6 or 0

E. 12 or 0

8. Simplify: $\frac{10}{a^2 - a - 6} - \frac{2}{a - 3}$.

A. $\frac{-2(a^2 - 6a + 9)}{(a^2 - a - 6)(a - 3)}$

B. $\frac{2(a + 7)}{(a - 3)(a + 2)}$

C. $-\frac{2}{a + 2}$

D. $\frac{5}{a + 2}$

E. $\frac{6 - 2a}{(a - 3)(a + 2)}$

9. Solve: $\frac{1}{2} - \frac{1}{x + 1} + \frac{1}{x} = 1$.

A. $\{2\}$

B. $\{-2\}$

C. $\{-1, 2\}$

D. $\{0, -1\}$

E. $\{-2, 1\}$

10. Find an equation for the line with slope -2 and containing the point $(-4, 0)$.

A. $2x + y = -8$

B. $2x - y = -8$

C. $2x + y = -4$

D. $x + 2y = -4$

E. $2x - y = -4$

11. Given: $-2x + 1 < 5$ or $3(x - 1) > -6$, select an equivalent inequality.
- A. $-2 < x < -1$ B. $x < -2$ or $x > -1$ C. $x > -1$
 D. $x > -2$ E. $x < -2$
12. Solve: $|2 - w| > 0$.
- A. $w = 2$ B. $w < 2$ C. $w > 2$
 D. all real numbers except 2 E. no solution
13. Peanuts cost \$6/kg and almonds cost \$9/kg. A twelve kilogram mixture of peanuts and almonds is prepared. If the mixture is worth \$7/kg, how many kilograms of peanuts were used?
- A. 8 kg B. 4 kg C. 5 kg D. 7 kg E. no solution
14. Simplify: $\sqrt{8}\left(\frac{\sqrt{6}}{\sqrt{12}} - \sqrt{18}\right)$
- A. $4\sqrt{2} - 12$ B. $2\sqrt{2} - 12$ C. -10
 D. -8 E. $-10\sqrt{2}$
15. Simplify: $\frac{1}{\sqrt{3} - 2}$.
- A. $-2 - \sqrt{3}$ B. $2 + \sqrt{3}$ C. $\frac{2 + \sqrt{3}}{7}$
 D. $2 - \sqrt{3}$ E. $-2 + \sqrt{3}$
16. Solve: $3 - \sqrt{\frac{x}{2}} = 1$.
- A. $\{2\sqrt{2}\}$ B. $\{4\}$ C. \emptyset D. $\{8\}$ E. $\{2\}$
17. Solve: $t^2 + 2t = 47$
- A. $-1 \pm 16\sqrt{3}$ B. $1 \pm \sqrt{46}$ C. $1 \pm 4\sqrt{3}$
 D. $-1 \pm \sqrt{46}$ E. $-1 \pm 4\sqrt{3}$
18. Select the statement that describes the graph of the parabola,
 $y = -9x^2 + 30x - 25$.
- A. It has no x -intercepts. B. It has no y -intercepts.
 C. It has exactly one x -intercept. D. It has a vertex that lies above the x -axis.
 E. It has a vertex that lies below the x -axis.