

ALG470 – College Algebra/Trigonometry

Summer Packet

NAME: _____

- ☐ Bring the first day of class
- ☐ Print the packet, complete all problems on separate sheets of paper, and staple them to the back of the packet
- ☐ Show your work, organizing it neatly and clearly
- ☐ The topics will be reviewed in conjunction with the new topics in the course

Simplify each expression.

1. $(-4 - 1)(-3 - 5) - 2^3$

2. $(6 - 9)(-2 - 7) \div (-4)$

3. $\left(-\frac{5}{9} - \frac{2}{3}\right) - \frac{5}{6}$

4. $\left(-\frac{2^3}{5} - \frac{3}{4}\right) - \left(-\frac{1}{2}\right)$

5. $\frac{6(-4) - 3^2(-2)^3}{-5[-2 - (-6)]}$

6. $\frac{(-7)(-3) - (-2^3)(-5)}{(-2^2 - 2)(-1 - 6)}$

Evaluate each expression for $a = -1$, $b = -2$, and $c = 4$.

7. $-c(2a - 5b)$

8. $(a - 2) \div 5 \cdot b + c$

9. $\frac{9a+2b}{a+b+c}$

10. $\frac{3|b|-4|c|}{|ac|}$

Perform the indicated operations.

11. $(3q^3 - 9q^2 + 6) + (4q^3 - 8q + 3)$

12. $2(3y^6 - 9y^2 + 2y) - (5y^6 - 4y)$

13. $(8y - 7)(2y^2 + 7y - 3)$

14. $(2r + 11s)(4r - 9s)$

15. $(3k - 5m)^2$

16. $(4a - 3b)^2$

Factor as completely as possible.

17. $3(z - 4)^2 + 9(z - 4)^3$

18. $7z^2 - 9z^3 + z$

19. $z^2 - 6zk - 16k^2$

20. $r^2 + rp - 42p^2$

21. $48a^8 - 12a^7b - 90a^6b^2$

22. $6m^2 - 13m - 5$

23. $49m^8 - 9n^2$

24. $169y^4 - 1$

Perform the indicated operations.

25. $\frac{k^2+k}{8k^3} \cdot \frac{4}{k^2-1}$

26. $\frac{3r^3-9r^2}{r^2-9} \div \frac{8r^3}{r+3}$

27. $\frac{x^2+x-2}{x^2+5x+6} \div \frac{x^2+3x-4}{x^2+4x+3}$

28. $\frac{27m^3-n^3}{3m-n} \div \frac{9m^2+3mn+n^2}{9m^2-n^2}$

29. $\frac{p^2-36q^2}{p^2-12pq+36q^2} \cdot \frac{p^2-5pq-6q^2}{p^2+2pq+q^2}$

30. $\frac{1}{4y} + \frac{8}{5y}$

31. $\frac{m}{4-m} + \frac{3m}{m-4}$

32. $\frac{3}{x^2-4x+3} - \frac{2}{x^2-1}$

Perform the indicated operations.

$$33. \frac{p^{-1}+q^{-1}}{1-(pq)^{-1}}$$

$$34. \frac{3+\frac{2m}{m^2-4}}{\frac{5}{m-2}}$$

Simplify each expression. Write answers without negative exponents. Assume all variables represent positive real numbers.

$$35. \left(-\frac{5}{4}\right)^{-2}$$

$$36. 3^{-1} - 4^{-1}$$

$$37. (5z^3)(-2z^5)$$

$$38. (8p^2q^3)(-2p^5q^{-4})$$

$$39. (-6p^5w^4m^{12})^0$$

$$40. (-6x^2y^{-3}z^2)^{-2}$$

$$41. \frac{-8y^7p^{-2}}{y^{-4}p^{-3}}$$

$$42. \frac{a^{-6}(a^{-8})}{a^{-2}(a^{11})}$$

Simplify each expression. Assume all variables represent positive real numbers.

$$43. \sqrt{200}$$

$$44. \sqrt[3]{16}$$

$$45. \sqrt[4]{1250}$$

$$46. -\sqrt{\frac{16}{3}}$$

$$47. -\sqrt[3]{\frac{2}{5p^2}}$$

$$48. \sqrt{\frac{2^7y^8}{m^3}}$$

$$49. \sqrt{18m^3} - 3m\sqrt{32m} + 5\sqrt{m^3}$$

$$50. \frac{2}{7-\sqrt{3}}$$

$$51. \frac{6}{3-\sqrt{2}}$$

$$52. \frac{k}{\sqrt{k}-3}$$

53. Find the slope of the line containing the points $(-3, 8)$ and $(-6, 4)$.

54. Find the equation of the line with $slope = \frac{2}{3}$ and y -intercept $= -3$.

55. Find the equation of the line with $slope = -3$ and through the point $(-7, -5)$.

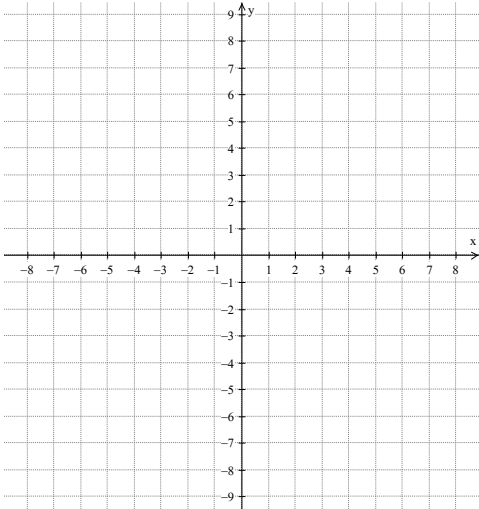
56. Find the equation of the line through the points $(6, 3)$ and $(9, -1)$.

57. Find the equation of the line parallel to the line $y = -2x + 5$ through the point $(4, -2)$.

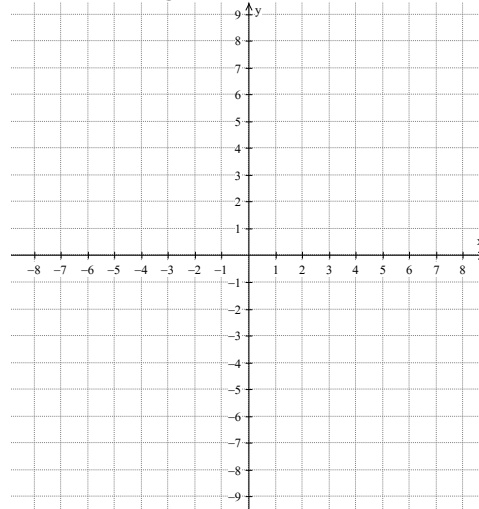
58. Find the equation of the line perpendicular to the line $y = \frac{2}{5}x + 1$ through the point $(-5, -2)$.

Graph the following equations on the grids provided.

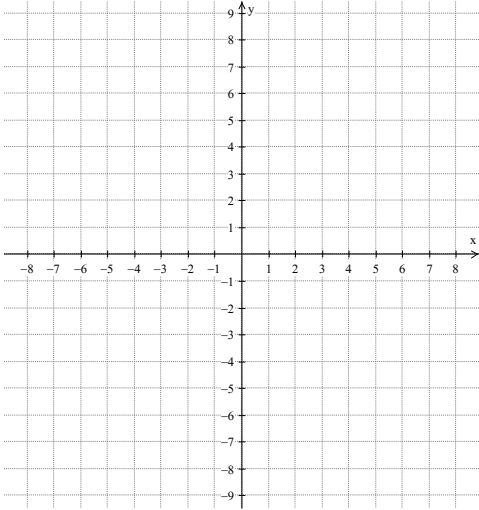
59. $y = 2x - 4$



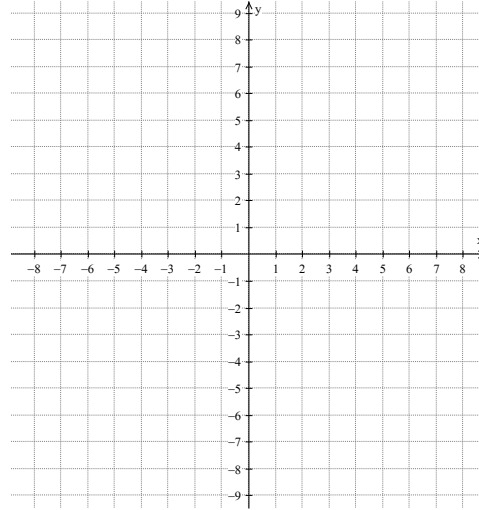
60. $y = -\frac{2}{3}x + 2$



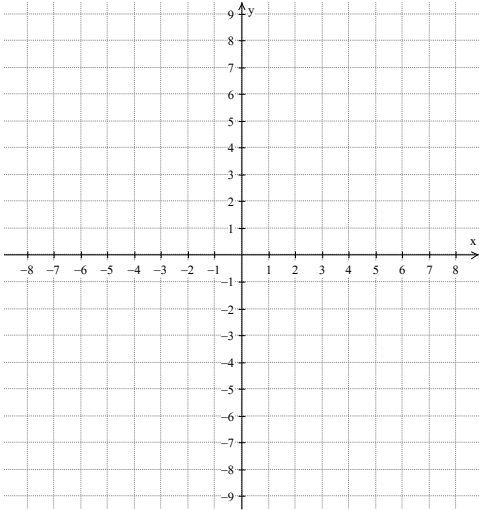
61. $x = -3$



62. $y = 5$



63. $2x + 3y = -6$



64. $x - 4y = 4$

