

Dear Future Pre-Calculus Honors students:

Attached is a packet of problems we think you should know how to do when you come into the first day of Pre-calculus Honors class. All of these topics were taught in either Algebra 1 or Algebra 2. We will spend a day or two going over them before taking a quiz over the types of problems in this packet. This packet will not be graded so if you think you know a topic, feel free to skip it. Just be prepared to do them on a quiz. The answer key to this packet will be posted on the school web site towards the end of summer.

If you are struggling to remember how to do some of these, here are a few resources. www.khanacademy.org and www.patrickjmt.com both have many videos explaining these topics in detail. Your former Algebra 2 honors book can still be accessed online at www.classzone.com. The username is PNHSrocks. The password is mathrules.

We can't wait to get started learning many great and interesting topics!

Thanks,

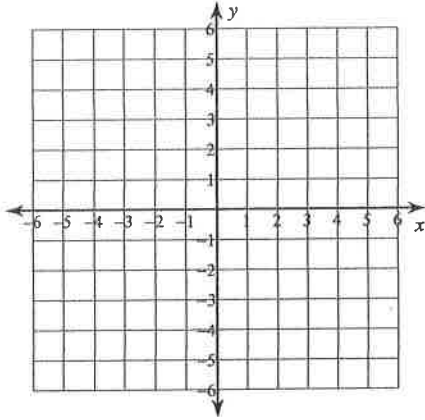
Pre-calculus Honors Teachers

Summer Practice

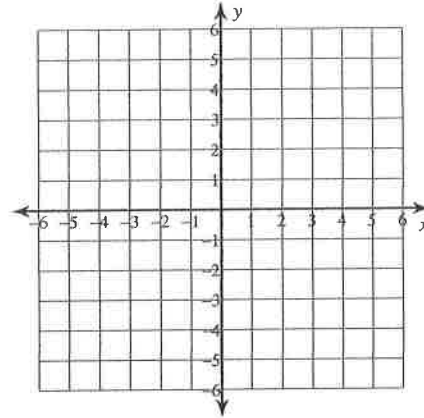
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Sketch the graph of each line.

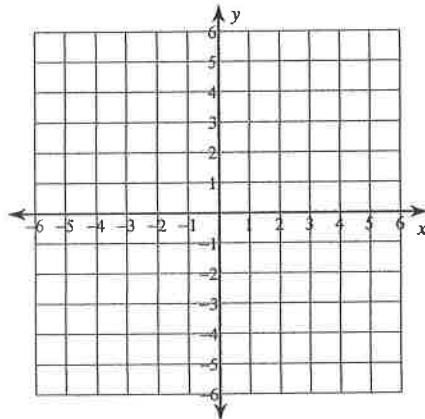
1) $0 = -2y + 4 - x$



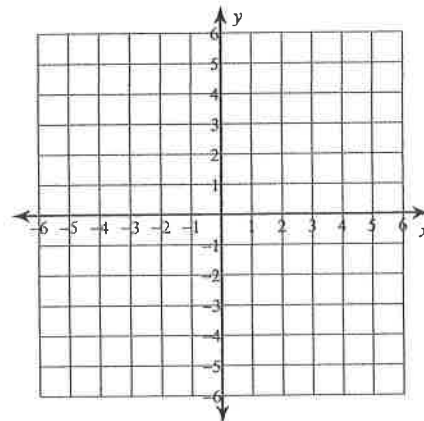
2) $-10x = 6y + 18$



3) $-4y = -3x + 4$



4) $1 = -\frac{1}{5}y$

**Write the point-slope form of the equation of the line through the given points.**

5) through: $(0, 1)$ and $(5, -2)$

6) through: $(3, 5)$ and $(-3, -3)$

Write the point-slope form of the equation of the line described.

7) through: $(-1, 2)$, parallel to $y = x - 2$

8) through: $(-4, -3)$, perp. to $y = -\frac{4}{7}x - 2$

Factor each completely.

9) $x^3 + 4x^2y$

10) $6x^2 + 78xy + 180y^2$

11) $4n^2 - 1$

12) $2x^2 + 9xy - 81y^2$

13) $10x^2 - 74xy + 84y^2$

14) $7v^2 + 51v + 14$

15) $9x^2 - 30x + 25$

16) $9x^3 - 14x^2 - 8x$

Solve each equation by taking square roots.

17) $10m^2 - 9 = 11$

18) $-5 - 4p^2 = -21$

Solve each equation by factoring.

19) $3p^2 + 5 = 5 + 4p$

20) $14x^2 + 6 = -25x$

Solve each equation by completing the square.

21) $19 + 14x = -5 - x^2$

22) $9n^2 = 80 - n^2 + 20n$

Solve each equation with the quadratic formula.

23) $7x^2 - 4x = 4$

24) $3 = -6b + 8b^2$

Find each product.

25) $(v + 3)(6v - 8)$

26) $(5n + 4)(3n - 6)$

27) $(4 + 3k)^2$

28) $(6a - 1)^2$

Simplify. Your answer should contain only positive exponents.

$$29) \frac{(2xy^4)^4}{2y^2 \cdot x^{-4}y^2}$$

$$30) \frac{x^{-1}y^{-3} \cdot (xy^2)^2}{y^3}$$

$$31) \frac{(uv^2)^{-1}}{u^{-3} \cdot u^0v^{-3}}$$

$$32) \frac{2x^4y^3}{(x^{-4})^3 \cdot x^{-4}y^4}$$

$$33) \left(\frac{2x^2}{2y^3 \cdot 2x^{-1}} \right)^0$$

$$34) \frac{(2u^3)^4}{v^2 \cdot 2u^3v^0}$$

Simplify.

$$35) 6\sqrt{384}$$

$$36) 3\sqrt{80x^3y}$$

$$37) -\sqrt{54x^2y^2z^2}$$

$$38) -7\sqrt{252x^2yz}$$

$$39) -8\sqrt{12x^2y^2z^2}$$

$$40) -2\sqrt{343x^3y^3}$$

$$41) 2\sqrt[4]{80} - 3\sqrt[4]{5}$$

$$42) 3\sqrt{3} - 3\sqrt{27}$$

$$43) -3\sqrt[3]{40} - 2\sqrt[3]{5}$$

$$44) -3\sqrt{2} + 3\sqrt{8}$$

$$45) -2\sqrt{8} - 2\sqrt{2}$$

$$46) -2\sqrt[3]{81} - 2\sqrt[3]{3}$$

$$47) \frac{\sqrt[3]{4}}{\sqrt[3]{27}}$$

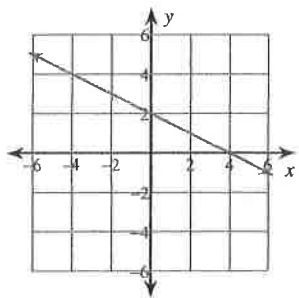
$$48) -\frac{4}{2 - 5\sqrt{2}}$$

$$49) \frac{-4 - \sqrt{2}}{4 - 5\sqrt{2}}$$

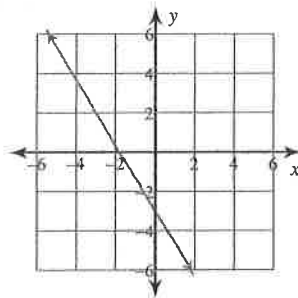
$$50) \frac{2 + \sqrt{5}}{2\sqrt{5} - 3}$$

Answers to Summer Practice

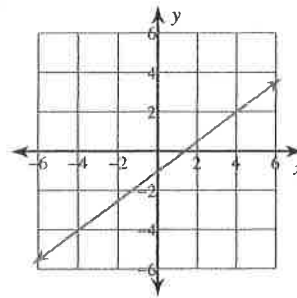
1)



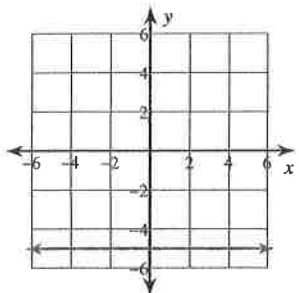
2)



3)



4)



5) $y - 1 = -\frac{3}{5}x$

6) $y - 5 = \frac{4}{3}(x - 3)$

7) $y - 2 = x + 1$

8) $y + 3 = \frac{7}{4}(x + 4)$

9) $x^2(x + 4y)$

10) $6(x + 3y)(x + 10y)$

11) $(2n + 1)(2n - 1)$

12) $(2x - 9y)(x + 9y)$

13) $2(5x - 7y)(x - 6y)$

14) $(7v + 2)(v + 7)$

15) $(3x - 5)^2$

16) $x(x - 2)(9x + 4)$

17) $\{\sqrt{2}, -\sqrt{2}\}$

18) $\{2, -2\}$

19) $\left\{\frac{4}{3}, 0\right\}$

20) $\left\{-\frac{3}{2}, -\frac{2}{7}\right\}$

21) $\{-2, -12\}$

22) $\{4, -2\}$

23) $\left\{\frac{2 + 4\sqrt{2}}{7}, \frac{2 - 4\sqrt{2}}{7}\right\}$

24) $\left\{\frac{3 - \sqrt{33}}{8}, \frac{3 + \sqrt{33}}{8}\right\}$

25) $6v^2 + 10v - 24$

26) $15n^2 - 18n - 24$

27) $16 + 24k + 9k^2$

28) $36a^2 - 12a + 1$

29) $8x^8y^{12}$

30) $\frac{x}{y^2}$

31) u^2v

32) $\frac{2x^{20}}{y}$

33) 1

34) $\frac{8u^9}{v^2}$

35) $48\sqrt{6}$

36) $12x\sqrt{5xy}$

37) $-3xyz\sqrt{6}$

38) $-42x\sqrt{7yz}$

39) $-16xyz\sqrt{3}$

40) $-14xy\sqrt{7xy}$

41) $\sqrt[4]{5}$

42) $-6\sqrt{3}$

43) $-8\sqrt[3]{5}$

44) $3\sqrt{2}$

45) $-6\sqrt{2}$

46) $-8\sqrt[3]{3}$

47) $\frac{\sqrt[3]{4}}{3}$

48) $\frac{4 + 10\sqrt{2}}{23}$

49) $\frac{13 + 12\sqrt{2}}{17}$

50) $\frac{7\sqrt{5} + 16}{11}$