

# Answers to the practice final

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1. Evaluate:  $3 \cdot (-1 - 7) - 2 \cdot 4^2 \div 8 \cdot 2$ .

*Answer.*  $-32$ . □

2. Let  $f(x) = x^3 - 2x^2 + 5x - 4$ . Find both  $f(0)$  and  $f(-3)$ .

*Answer.*  $f(0) = -4$ ,  $f(-3) = -64$ . □

3. Solve for  $x$ :  $-2(3x - 4) = 5(2 - 2x)$ .

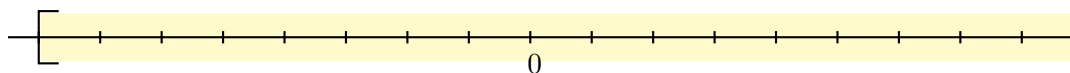
*Answer.*  $x = \frac{1}{2}$ . □

4. Solve for  $y$ :  $3x - 4y = 20$ .

*Answer.*  $y = \frac{3}{4}x - 5$ . □

5. Solve  $-3x + 5 \leq 26$ . Graph the solution set *and* represent it in interval notation.

*Answer.* The solution is  $-7 \leq x$ . The graph of the solution is:



In interval notation the solution set is  $[-7, \infty)$ . □

6. Solve for  $x$ :  $|5x - 3| = 7$ .

*Answer.*  $x = 2$  or  $x = -\frac{4}{5}$ . □

7. Sketch the graph of  $2x - 3y = 6$ . Find the  $x$  and  $y$ -intercepts.

*Answer.* The  $x$ -intercept is  $(3, 0)$  and the  $y$ -intercept is  $(0, -2)$ . The graph of the line is shown in Figure 1. □

8. Find the equation of the line that passes through the points  $(2, 4)$  and  $(-1, -11)$ .

*Answer.*  $y = 5x - 6$  □

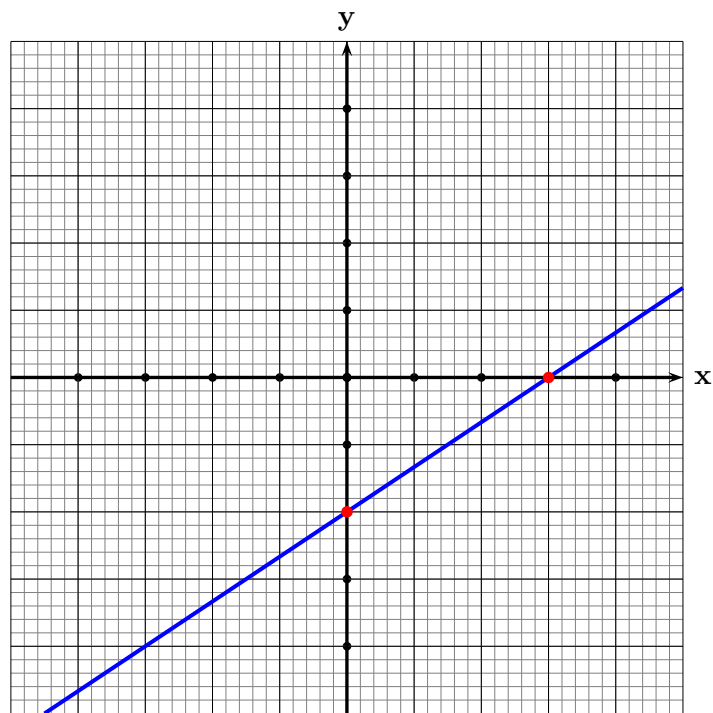


Figure 1: The graph for Question 7

9. Solve for  $x$  and  $y$ : 
$$\begin{cases} x - 5y = -28 \\ 3x + 7y = 26 \end{cases}$$

*Answer.*  $x = -3, y = 5.$

10. Multiply and simplify:  $(x^2 - 2x + 4)(x + 2).$

*Answer.*  $x^3 + 8.$

11. Simplify:  $\left(\frac{2xy^4}{zw}\right)^4 (xy^3z^2)^2$

*Answer.*  $\frac{16x^6y^{22}}{w^4}$

12. Simplify:  $\frac{8x^4 - 4x^3 - 22x^2}{2x^2}.$

*Answer.*  $4x^2 - 2x - 11.$

13. Factor:  $6x^2 - 19x + 15.$

*Answer.*  $(2x - 3)(3x - 5).$

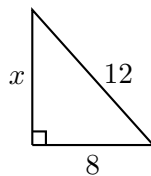
14. Solve for  $x$ :  $x^2 - 2x - 3 = 0.$

*Answer.*  $x = 3, x = -1.$

15. Factor completely:  $7a^3b^2 - 63ab^2.$

*Answer.*  $7ab^2(a + 3)(a - 3).$

16. Find the length  $x$  and simplify your answer.



*Answer.*  $x = 4\sqrt{5}$

17. At 5 pm two buses leave a town heading in opposite directions. One bus travels 54 mph and the other 62 mph, what time is it when they are 232 miles apart?

*Answer.* When the two buses meet the time is 7 pm.

18. A car gets 30 miles per gallon of gas, how many gallons of gas are needed to travel 70 miles?

*Answer.*  $\frac{7}{3}$  or approximately 2.33 gallons.

19. Factor:  $x^2y^3z^2 - 5x^2y^3 + 10z - 2z^3$ .

*Answer.*  $(x^2y^3 - 2z)(z^2 - 5)$ . □

20. Simplify:  $\sqrt{75x^32y^2}$ .

*Answer.*  $5x^{16}|y|\sqrt{3}$ . □

21. Find the distance between the points  $(-1, 2)$  and  $(3, -4)$ .

*Answer.*  $2\sqrt{13}$  □