Part 1. Computational math. Show all work for credit. 2 points each.

1. Compute the following.

a) $\dfrac{\dfrac{-14}{3}}{7} =$

b) $\dfrac{-3}{4} \div \left(-\dfrac{17}{6} \right) =$

c) $-\left|-3+6\right| =$

d) $\dfrac{1}{4} + \dfrac{2}{3} - \dfrac{5}{2} =$

e) $16 \div 4 - 2 \cdot 3^2 =$

f) -4^2

g) $\dfrac{21}{2} \times \dfrac{4}{3} =$

h) $4^{\frac{3}{2}}$

i) $12.9 + 1.01 =$

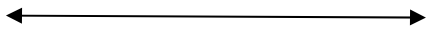
j) $21 \cdot 0 \cdot (5+4) =$

Part 2. Show all work for possible partial credit. 5 points each.

2. Solve the equation for x. $5x = 3(2 - 3x) - 7$

3. Solve the inequality. Give the solution set in both interval and graph forms.

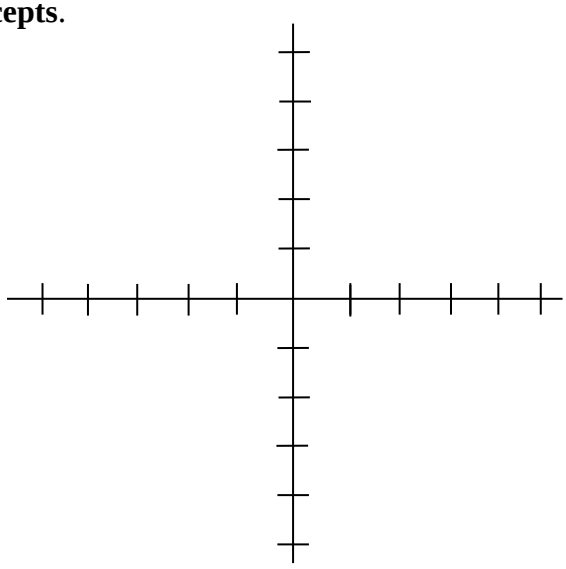
$\frac{2}{3}x \geq 6$

Graph solution: 

Interval notation:

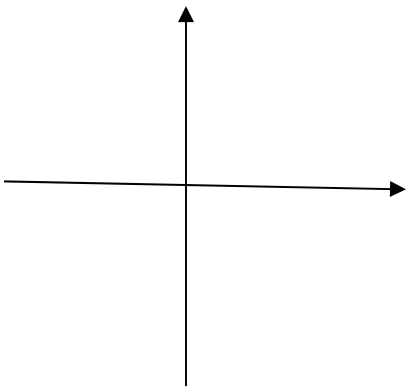
4. Graph the given line. **Label all intercepts**.

$3x + 5y = 7$



5. Graph the line that has a *y*-intercept of (0,4) and a slope of $\frac{-1}{3}$

   Label at least 2 points.



6. Find the product and simplify: $(x-\sqrt{y})(x+\sqrt{y})$

7. Simplify the expression: $\frac{1}{3}-\frac{5}{6x}+\left(\frac{3}{3x}\right)$

8. Simplify using **only positive exponents**. Assume all variables represent positive real numbers.

$$\frac{2x^5 \cdot 2^{-2}}{(x^{-2})^3}$$

Factor **completely, write prime if it can't factor**:

9. $3y^2 - 11y - 20$.

10. $2x^3 - 50x$

11. $2a^3 + a^2 - 14a - 7$

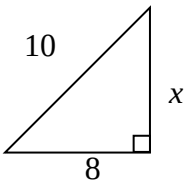
12. Express and simplify in lowest terms: $\dfrac{x^2 - 9}{x^2 - x + 6}$

13. Solve: $x^2 - 81 = 0$.

14. Find the slope of the line through the points (-2, 1) and (-3, 4)

15. Given $C = \frac{5}{9}(F - 32)$, solve for F.

16. For the given right triangle, find *x*. You must set up and solve an equation for credit.



Part 3. Show all work for possible partial credit. 7 points each

17. Solve for *x*. $\frac{3x+2}{3} + \frac{x+4}{4} = -2$

18. Multiply and **simplify**: $\dfrac{4x-20}{5x}\cdot\dfrac{4x^3}{10-2x}$

19. Choose a domain for each function. Write the correct number in the answer blank.

a) $f(x)=\dfrac{4}{x-3}$ Answer _____

b) $g(x)=\sqrt{x}-3$ Answer _____

c) $h(x)=\sqrt{x-3}$ Answer _____

1) $(-\infty,\infty)$
2) $(0,\infty)$
3) $(9,\infty)$
4) $[3,\infty)$
5) $(-\infty,3)\cup(3,\infty)$
6) Not listed.

20. Find the equation of the line passing through $(2,-1)$ with slope -5.

The point slope form is $\Rightarrow$ (y - ___) = ____(x - ___).

The slope intercept form is $\Rightarrow$ y =___ x +___ .

21. For the following pair of functions, find the following. Be sure to express in simplest form.

$$f(x) = 4x - 3 \text{ and } g(x) = -2x^2 + 2x + 6$$

(a) $(f + g)(2) =$ (b) $(f - g)(x) =$

22. Perform the indicated operation. **Reduce** to lowest terms.

$$\frac{2}{x-2} - \frac{5}{x^2 - 2x}$$

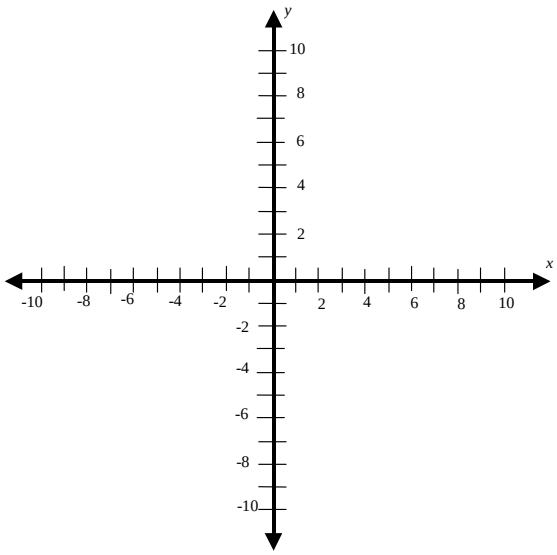
23. Express the radical in simplified form. Assume that all variables represent positive real numbers.

a) $\sqrt{\frac{25a^6}{81b^{10}}}$ b) $2\sqrt{24} + \sqrt{54}$

24. Graph the function by creating a table of ordered pairs:

$f(x) = x^2 - 3$

x	y



25. Complete the following table.

Inequality(set)	Interval
a) $x \geq 5$	_____
b) _____	$(-\infty, 2)$
c) $-3 < x \leq 1$	_____
d) $x \neq 2$	_____

26. Solve for x. $x^3 - 14x^2 + 45x = 0$

27. Solve for p *algebraically:*. $\sqrt{5p+6} = p+2$

28. Given $f(x) = x^2 - 3x + 2$, evaluate

a) $f(-2)$ b) $f(2b)$

Part 4. Choose 3 of the following 5 problems. You must indicate the 3 problems to be graded. If not, we will grade the first three. Show all work for possible partial credit. 7 points each.

❑ 29. Solve for *x and* simplify answers. $x^2 - 8x - 3 = 0$

Grade

❑ 30. Factor completely: $1 - x^8$.

Grade

❑ 31. How many gallons of 40% antifreeze must be mixed with 10 gallons of 70% solution to get a 50% solution?

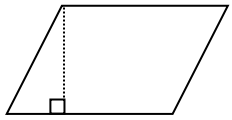
Grade

❑ Grade

32. The base of a parallelogram is 5 feet more than the height. If the area of the parallelogram is 36 ft.^{2}, what are the measures of the base and height?

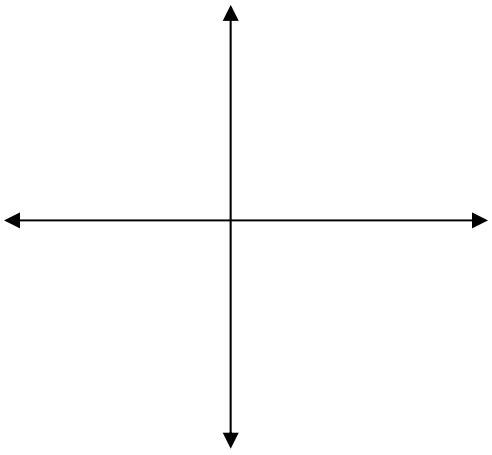
SET UP AND SOLVE AN EQUATION FOR CREDIT!

area of parallelogram = base times height



❑ Grade

33. Graph the function $f(x) = -\frac{1}{x}$. Label at least 5 pts.



BE SURE YOU HAVE MARKED THE 3 PROBLEMS TO BE GRADED.