

Are you Ready for Pre-Calculus?

Convert the measuring units as indicated

1. $60\text{yd} = \underline{\hspace{2cm}}$ ft, if $1\text{yd} = 3\text{ft}$

180ft

2. $5\text{ gal} = \underline{\hspace{2cm}}$ qt, if $1\text{ gal} = 4\text{qt}$

20qt

3. $7000\text{m} = \underline{\hspace{2cm}}$ km, if $1\text{km} = 1000\text{m}$

7km

4. $20^\circ = \underline{\hspace{2cm}}$ Radians, if $180^\circ = \pi$ Radians

$\frac{\pi}{9}$ Radians

Use the Pythagorean Theorem to find the missing side length. Leave answers in simplest form.

5. $a = 11, b = 8, c = ?$

$c = \sqrt{185}$

6. $a = \frac{2}{3}b, c = 12$

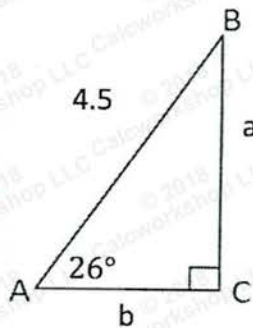
$a = \frac{24\sqrt{13}}{13}$

$b = \frac{36\sqrt{13}}{13}$

Solve the right triangle. Round decimals to the nearest hundredth.

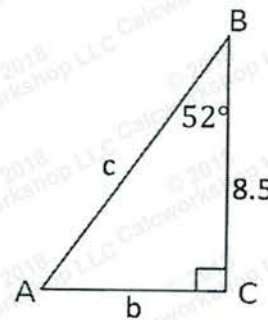
7.

$B = 64^\circ$
 $a = 1.973$
 $b = 4.045$



8.

$A = 38^\circ$
 $c = 13.806$
 $b = 10.879$



Perform the indicated operation and reduce to simplest form.

9. $\frac{3}{5} + \frac{4}{9}$

$\frac{47}{45}$

10. $\frac{5}{6} - \frac{2}{13}$

$\frac{53}{78}$

11. $\frac{(\frac{3}{4} + \frac{7}{9})}{2}$

$\frac{55}{72}$

12. $[(3 \cdot 2 + 5)2]2 - 4$

40

13. $x^3(x-1)^2(2+x)(2-x)$

$$-x^7 + 2x^6 + 3x^5 - 8x^4 + 4x^3$$

14. $\frac{x - \frac{5x}{x+5}}{x + \frac{5x}{x-5}}$

$$\frac{x-5}{x+5}$$

Solve for the indicated variable

15. $(2x+y)(2x-y) = 4x(x-1); x$

$$x = \frac{y^2}{4}$$

16. $R = \frac{a}{1-a}; a$

$$a = \frac{R}{1+R}$$

Factor completely

17. $7y^2 - 23xy + 6x^2$

$$(7y-2x)(y-3x)$$

18. $9x^3 - 63x^2 + 108x$

$$9x(x-3)(x-4)$$

Solve each equation by the most efficient method. Write all answers in simplest form

19. $7n + 2[3(1-n) - 2(1+n)] = 14$

$$n = -4$$

20. $3x^2 - 41x = -60$

$$x = \frac{5}{3} \text{ or } x = 12$$

21. $4x^4 + 21x^2 - 18 = 0$

$$x = \pm \frac{\sqrt{3}}{2} \text{ or } x = \pm i\sqrt{6}$$

22. $\frac{1}{y} - \frac{2}{1-y} = \frac{8}{y^2 - y}$

$$y = 3$$

23. $9^{4+x} \cdot 81^x = \frac{1}{3}$

$$x = -\frac{3}{2}$$

24. $\log_2(2+5x) = 3$

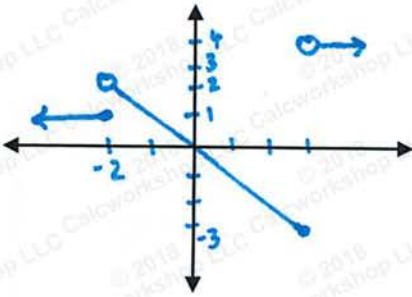
$$x = \frac{6}{5}$$

$$25. \sqrt{9-7x} + 6 = 10$$

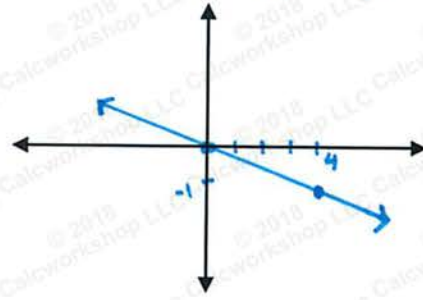
$$x = -1$$

Graph each function

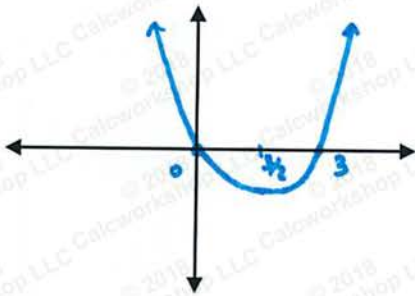
$$26. f(x) = \begin{cases} 1 & x \leq -2 \\ -x & -2 < x \leq 3 \\ 4 & x > 3 \end{cases}$$



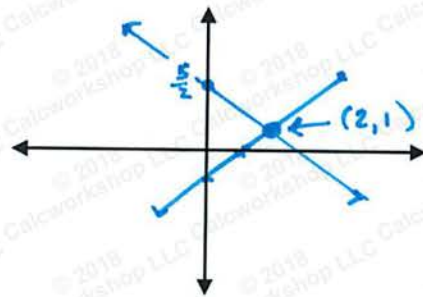
$$27. \frac{x}{4} + y = 0 \rightarrow y = -\frac{1}{4}x$$



$$28. y = x^2 - 3x \rightarrow y = x(x-3)$$



$$29. \begin{cases} 3x + 4y = 10 \rightarrow y = -\frac{3}{4}x + \frac{5}{2} \\ x - y = 1 \rightarrow y = x - 1 \end{cases}$$



30. Given $f(x) = 2x^2 + 3x - 5$ and $g(x) = 12 - 2x$ find the following

a. $f(1) = 0$

b. $g(-3) = 18$

c. $(fg)(2) = 72$

d. $\left(\frac{f}{g}\right)(0) = -\frac{5}{12}$

e. $f(g(x))$

$$8x^2 - 102x - 319$$

f. $g(f(x))$

$$-4x^2 - 6x + 22$$