Algebra 101 worksheet 1

1 Linear equations

Solve the following equations for the specified variable.

1. Solve for c :
$$L - 7c = W + 20c$$
2. Solve for L :
$$KL + h = 19 - 6L$$
3. Solve for w :
$$A + 25w = k + 25w$$
4. Solve for y :
$$W + ky = ny + q$$
5. Solve for t :
$$Pt + z = X + t$$
6. Solve for M :
$$MQ + n = MN + k$$
7. Solve for h :
$$G + 23h = 23h + 23$$
8. Solve for u :
$$2u + x = qu + 19$$
9. Solve for D :
$$Dg + V = DQ + y$$
10. Solve for r :
$$16r + 13 = q - 9r$$
11. Solve for Y :
$$Ye + a = 6Y + 6$$
12. Solve for X :
$$-10X - 11 = 2X + 14$$
13. Solve for k :
$$kq - 20 = G + 11k$$
14. Solve for a :
$$Q + Ra = R - 18a$$
15. Solve for z :
$$M - 25z = Xz - 1$$
16. Solve for V :
$$-8V + f = 2V + 15$$
17. Solve for N :
$$NS - 13 = NT + 12$$
18. Solve for m :
$$V + mq = 18m + n$$
19. Solve for D :
$$Dh - 3 = 6 - 21D$$
20. Solve for k :
$$bk + 22 = -23k + n$$

2 Quadratic equations

Solve the following quadratic equations.

1. $x^2 + 43x + 460 = 0$
2. $-15x^2 - 4x = -8x$
3. $-13x^2 - 11x = -8x^2 - 2x$
4. $8x^2 - 25x - 17 = -17x^2 - 26$
5. $-18x^2 - 19 = 0$
6. $x^2 = 15x^2 - 26$
7. $6x^2 + 2 = 0$
8. $7x^2 - 6x + 20 = 17 - 15x$
9. $-6x^2 - 5 = 0$
10. $17x^2 + 20x + 13 = 17x^2 - 9x + 6$
11. $4x^2 - 24x + 17 = 22$
12. $x^2 - 15x + 50 = 0$
13. $x^2 - 22x + 40 = 0$
14. $x^2 - 13x - 90 = 0$
15. $x^2 + 6x - 520 = 0$
16. $-25x^2 = 11x$
17. $x^2 + 11x + 18 = 0$
18. $x^2 - x - 56 = 0$
19. $-17x^2 = 9x + 6$
20. $x^2 - 7x + 10 = 0$

3 Compute the derivative

['x', 'y', 'z']

1. $\frac{d}{dx} \frac{\sin(x) + \cos(x)}{\sin(x)}$
2. $\frac{d}{dx} \frac{\sqrt{x} - 14x + 15}{\sqrt{x}}$
3. $\frac{d}{dx} \frac{e^x + \cos(x)}{\tan(x)}$
4. $\frac{d}{dx} \frac{15x^2 + 4x + \tan(x)}{x}$

5. $$\frac{d}{dx}\frac{x+\cos(x)}{3x^3-15x^2-24}$$

6. $$\frac{d}{dx}\frac{\sqrt{x}+\tan(x)}{\cos(x)}$$

7. $$\frac{d}{dx}\frac{20x+\cos(x)+11}{x}$$

8. $$\frac{d}{dx}\frac{\sin(x)+\cos(x)}{\tan(x)}$$

9. $$\frac{d}{dx}\frac{\sqrt{x}-24x}{x}$$

10. $$\frac{d}{dx}\frac{-18x^3-24}{-18x^3-11x^2}$$