Example Worksheet 1

1 Linear equations

Solve the following equations for the specified variable.

1. Solve for C :
$$Ch + X = CS + T$$
2. Solve for H :
$$H + W = -17H - 16$$
3. Solve for k :
$$Z - 7k = Z + 8k$$
4. Solve for h :
$$-18h - 2 = -23h + 16$$
5. Solve for t :
$$q + 15t = Xt + 20$$
6. Solve for N :
$$HN + P = Nh + 17$$
7. Solve for h :
$$A + hp = Bh + q$$
8. Solve for H :
$$20H - 14 = -11H + 25$$
9. Solve for a :
$$2a - 23 = 3a + n$$
10. Solve for w :
$$Mw + p = L + Zw$$
11. Solve for X :
$$E + X = 22X - 16$$
12. Solve for J :
$$HJ + y = -13J - 14$$
13. Solve for x :
$$kx - 13 = -19x - 14$$
14. Solve for h :
$$S + 16h = Gh + 20$$
15. Solve for d :
$$Ld + a = 9d + 3$$
16. Solve for y :
$$U + 22y = -13y + 14$$
17. Solve for f :
$$-15f + 15 = Af + 6$$
18. Solve for r :
$$-10r - 18 = d + 13r$$
19. Solve for z :
$$b + yz = D + Mz$$
20. Solve for g :
$$9g + y = 12g + 18$$

2 Quadratic equations

Solve the following quadratic equations.

1. $$y^2 + 6y - 55 = 0$$
2. $$x^2 + 22x - 75 = 0$$
3. $$-14x^2 = -7x - 8$$
4. $$-22x^2 + 19x + 19 = -21x$$
5. $$y^2 + 7y - 330 = 0$$
6. $$y^2 - 20y - 21 = 0$$
7. $$18x^2 + 6x - 9 = 0$$
8. $$7x^2 - 26 = -9x + 23$$
9. $$-4x^2 + 13x = 0$$
10. $$x^2 + 4x - 117 = 0$$
11. $$19x^2 - 19x = 0$$
12. $$13y^2 + 15y - 10 = -14y^2 + 16y$$
13. $$y^2 + 9y - 90 = 0$$
14. $$-12x^2 + 23 = 0$$
15. $$6y^2 + 7 = -21y^2 - 11y - 20$$
16. $$-5y^2 - 16y = -5y^2 + 4y$$
17. $$x^2 + 7x - 78 = 0$$
18. $$y^2 - 34y + 264 = 0$$
19. $$17x^2 - 6 = -22x^2 - 22x - 6$$
20. $$9y^2 + 14y = -3y$$

3 Differentiation

Compute each derivative

1. $$\frac{d}{dx}\left(-\frac{1}{24x}\left(\log\left(x\right) + \sin\left(x\right)\right)\right)$$
2. $$\frac{d}{dx}\left(\frac{\sqrt{x} + \log\left(x\right)}{11x + 2}\right)$$
3. $$\frac{d}{dx}\left(\frac{\sqrt{x} + 7x + 2}{10x + 17}\right)$$

4. $$\frac{d}{dx}\left(\frac{1}{\log\left(x\right)}\left(\sin\left(x\right)+\cos\left(x\right)\right)\right)$$

5. $$\frac{d}{dx}\left(\frac{\sqrt{x}+x}{\sin\left(x\right)}\right)$$

6. $$\frac{d}{dx}\left(\frac{-3x^2+20x+23}{\sin\left(x\right)}\right)$$

7. $$\frac{d}{dx}-8$$

8. $$\frac{d}{dx}\left(\frac{\sqrt{x}+\sin\left(x\right)}{\tan\left(x\right)}\right)$$

9. $$\frac{d}{dx}\left(\frac{1}{x}\left(15x^2+\sin\left(x\right)\right)\right)$$

10. $$\frac{d}{dx}\left(\frac{1}{\cos\left(x\right)}\left(20x^3-16x^2+18x+\log\left(x\right)\right)\right)$$

4 Compute the integral

Compute the integral of the polynomials.

1. $$\int 10z\,dz$$

2. $$\int\left(-5\right)\,dz$$

3. $$\int 14\,dy$$

4. $$\int\left(-11y^2\right)\,dy$$

5. $$\int 9z\,dz$$

6. $$\int\left(23z^2-5z+2\right)\,dz$$

7. $$\int\left(16y+24\right)\,dy$$

8. $$\int 14y^2\,dy$$

9. $$\int 20z\,dz$$

10. $$\int\left(2y-23\right)\,dy$$

5 Compute the integral

Compute the integral of the powers.

1. $$\int\sqrt[3]{y}\,dy$$

2. $$\int z\,dz$$

3. $\int \sqrt[3]{z}\, dz$

4. $\int \sqrt[4]{z}\, dz$

5. $\int \sqrt{z}\, dz$

6. $\int \sqrt[4]{z}\, dz$

7. $\int \sqrt{y}\, dy$

8. $\int \sqrt[4]{z}\, dz$

9. $\int z\, dz$

10. $\int \sqrt[3]{z}\, dz$