Solutions to Mathematical Survey

Q1.
$$x = \frac{6}{8}$$

Q2.
$$x^{20}$$

Q3.
$$x^7$$

Q4.
False

Q5.
$$\frac{16}{7}$$

Q6.
$$\frac{37}{64}$$

Q7.
$$\frac{8}{\Delta y}$$

Q8.
$$t = \sqrt{\frac{v_0}{3}}$$

Q9.
$$v = \sqrt{G(M_1 + M_2)}$$

Q10.
$$3x^{-1} + 2x^{-1}y^3 - 9x^{-1}z^{-2}$$

Q11.
$$x = \frac{-6z \pm \sqrt{36z^2 - 20y^2 z}}{2y}$$

Q12. Multiply equation (1) by 2 and add it to equation (2) to eliminate y. Then solve for x,
$$x = \frac{1}{2}$$

Q13.
$$\frac{P_1}{P_2} = 6$$

Q14.
$$\frac{1}{2(z-1)} - \frac{1}{2(z+1)} = \frac{z+1}{2(z-1)(z+1)} - \frac{z-1}{2(z+1)(z-1)} = \frac{2}{2(z-1)(z+1)} = \frac{1}{(z-1)(z+1)}$$

Q15.
$$25x^2 + 30xy + 9y^2$$

Q16.
$$|x| = \frac{3}{2}$$

Q17.
$$\text{False, the correct inverse of } \log_c(z) = k \text{ is } z = c^k$$

Q18.
$$x \approx 3$$

Q19.
$$\frac{1}{3\log(x)} + \frac{1}{3} + \frac{\log(y)}{3\log(x)}$$

Q20.
$$\approx 1.176 \text{ rad}$$

Q21.
$$\text{False}$$

Q22.
$$-9\pi \le 9\pi \sin(\theta) \le 9\pi$$

Q23.

True

Q24.

True

Q25.

≈ 1.176 radians

Q26.

Both are False