1. Graph $y = e^{-x^3}$.
2. Graph $y = \ln(1 - x)$.
3. Graph $y = -2\cos(3x - 2\pi)$ over the interval $[0, \pi]$.
4. Graph $y = \tan(x + 45^\circ)$ from $x = -30^\circ$ to $x = 60^\circ$.
5. Graph $x = -y^2 - 3y - 4$ and find the vertex and the axis of symmetry.
6. Graph $x^2 - 4x + y^2 + 8y = 22$ and find the coordinates of foci.
7. Graph $x^2 + 2x - y^2 - 4y = 0$ and find the transverse axis.
8. Let $\log_2 3 = a$, $\log_3 7 = b$, write $\log_{63} 84$ in terms of $a, b$.
9. Solve the triangle: $\alpha = 40^\circ, \beta = 60^\circ, a = 4$.
10. Solve the equation $\sin \theta = \tan \theta$.
11. Prove the identity: $\csc \theta - \sin \theta = \cos \theta \cot \theta$.
12. Solve linear system: $2x + 7y = 5$ and $3x - 9y = 14$ by any method.
13. Solve linear system: $2x + 7y - z = 5$, $3x - 9y + z = 14$ and $y - 5z = 2$ by any method.
14. Use Cramer’s rule to solve the system $3x + 7y = \pi$ and $\sqrt{2}x - 9y = 1$.
15. Solve nonlinear system: $\ln x = 4 \ln y$ and $\log_3 2 = 2 + 2 \log_3 y$.
16. Let $\cos \theta + 3 \sin \theta = 2$ and $0 < \theta < 90^\circ$. Find the exact value of $\cos \theta \sin \theta$.
17. Find the exact value of $\sin(2\sin^{-1} \frac{1}{2}) + \cos(2\cos^{-1} \frac{1}{2})$.
18. Write down a formula for $f(x)$ if $f(x)$ is a sin function with amplitude 2, period $2\pi$ and phase shift $\frac{\pi}{4}$.
19. A radioactive substance decays from 10 g to 6 g in 5 days. Find the half life of this substance in terms of hours.
20. A survey of a certain community of 10,000 residents shows that the number of residents $N$ who have heard a piece of information after $m$ months is given by the formula $m = 55.3 - 6\ln(10,000 - N)$. How many months will it take for half of the citizens to learn about a community program of free blood pressure reading?