Math Readiness Assessment

PHYS 120 Spring 2026

Instructions: Show all your work and use only a scientific calculator. Turn it in to me when you're done!

1. Solve for v in the following equation: $F = m\frac{v^2}{r}$.

2. A particle's position is given by $x(t) = 2t^2 - 5t + 3$. At what time t is the particle at position $x = 0$?

3. Simplify the following expression: $\frac{1}{2} + \frac{3}{4} - \frac{5}{8}$

4. Simplify the following expression: $\frac{\frac{2}{x}}{\frac{4}{x^2}}$.

5. Convert 72 km/h to m/s.

6. Write 0.00000456 in scientific notation.

7. Evaluate and express your answer in scientific notation:
$\left(3.0 \times 10^8\right)\left(4.0 \times 10^{-3}\right)$

8. A right triangle has a hypotenuse of 10 and an angle θ such that $\sin\theta = 0.6$. Find $\cos\theta$ and $\tan\theta$.

9. Find the following angle and give your answer in degrees: $\theta = \sin^{-1}(0.5)$. State what geometric situation this would be relevant to and sketch it.

10. Solve for x and y:
$$\begin{cases} 2x + y = 7 \\ 3x - y = 8 \end{cases}$$

11. Compute the derivative with respect to t: $x(t) = 4t^3 - 2t^2 + 5$. State one physical interpretation of this derivative.

12. Evaluate the following integral: $\int_0^2 \left(3t^2 - 4\right) dt$.

13. Solve for x: $\log_{10}(x) = 3.5$.

14. Solve for y: $\ln(y) = 3$.

15. A particle moves along a straight line. Its velocity as a function of time is $v(t) = 2$ m/s for $0 \leq t \leq 5$. Sketch a graph of this function. Compute the area under the curve from $t = 0$ to $t = 5$. Evaluate $\int_0^5 v(t)\, dt$. Explain in one sentence what this integral represents physically.