10360 Algebra Quiz - 45 mins - No Calculators Allowed.

1. Consider the formula
$$A = \left(1 + \frac{r}{n}\right)^{nt}.$$
Here all variables r, n, and t are positive.

1a. Find r in the formula in terms of all other variables A, n, and t.

1b. Find t in the formula in terms of all other variables A, n, and r.

2. Factor completely the expression:

$$x^4 - 16 \stackrel{?}{=}$$

3. Let $g(n) = \dfrac{2^{2n}\sqrt{x^{n+1}}}{3^{n+2}}$. Find the expression $\dfrac{g(n+2)}{g(n+1)}$.

You should collect all like terms. The final answer should have no radicals and no negative exponents.

$$\dfrac{g(n+2)}{g(n+1)} \stackrel{?}{=}$$

4. Find the x in terms of t if $\ln(2x + 1) = \ln(x - 1) + t$

5. Write $f(x) = 2x^2 - 3x + 1$ in the form $A(x + B)^2 + C$ where A, B, and C are constants.

6. Find the **coordinates** of the points of intersection between the curves

$$y = 2x - 1 \qquad \text{and} \qquad y^2 = x.$$

7. Solve the equation $e^{2x} = 4e^{1-x}$.

8. Find x if $\dfrac{2e^x - 3}{e^x - 1} = 4$.

9. Find x if $e^{2x} = e^x + 2$.