You must get at least 7 out of 8 problems on some Gateway Exam in order to get a C or better in Math 140. No calculators.

1. Complete the square for \(6F^2 - 3F + 11\).
\[
6(F - \frac{1}{4})^2 + \frac{85}{8}
\]

2. Simplify \(\frac{(5 \cdot 6)^{21} + 5^{20}}{5^{20}}\).
\[5 \cdot 6^{21} + 1\]

3. Let \(g(x) = \frac{1}{\sqrt[3]{x}}\). State the domain of \(g\) and compute \(g(-\frac{1}{27})\).

\[\text{domain: } x \neq 0, \quad g(-\frac{1}{27}) = -3\]

4. Find all real numbers \(d\) such that \(6d^2 = d^2 + 7d - 2\).
\[d = \frac{2}{5}, 1\]

5. Expand \((x - 1)(x - 2)(x - 3)\).
\[x^3 - 6x^2 + 11x - 6\]

6. Use inequalities to write \(|t - 2| > \frac{1}{2}\) without absolute value signs.
\[t < \frac{3}{2} \text{ or } \frac{5}{2} < t\]

7. Factor \(x^2 - 5x + 6\).
\[(x - 2)(x - 3)\]

8. Solve for \(s\): \(24^{2/3} 3^{-2/3} = 8^{-s+1}\).
\[s = \frac{1}{3}\]