COLLEGE ALGEBRA QUIZ

(1) Solve. $x^2 - 16 < 0$
Solution: $(-4, 4)$

(2) Solve. $2x^2 > -5x + 3$
Solution: $(\frac{1}{2}, \infty)$

(3) Solve. $(1 - x)(x + 3)(x - 2) \leq 0$
Solution: $[-3, \infty)$

(4) Solve. $\frac{x+2}{x-3} < 5$
Solution: $(-\infty, 3) \cup (\frac{17}{4}, \infty)$

(5) The function
$$H(t) = -4.9t^2 + 103$$
gives the height H, in feet, of a bomb launched with a velocity of 72 m/sec from an airplane that is at an elevation of 103 m. Where t is the time, in seconds.
(a) Determine when the bomb reaches the ground. Give solution with 1 decimal places.
Solution: 4.6 seconds.
(b) On what interval is the height greater than 50 m? Give solution in interval notation, and 1 decimal place.
Solution: $(-\infty, 3.3)$

(6) The population P, in thousands, of a bacteria sample is given by
$$P(t) = \frac{6000t}{3t^2 + 10}$$
where t is the time, in months. Find the interval on which the population was 300,000 or greater.
Solution: $[\frac{10 - \sqrt{70}}{3}, \frac{10 + \sqrt{70}}{3}]$

(7) Solve. $|1 - \frac{1}{x^2}| < 8$
Solution: $(-\infty, -\frac{1}{3}) \cup (\frac{1}{3}, \infty)$

(8) Solve. $(x - 2)^{-3} < 0$
Solution: $(-\infty, 5)$