Name: **Perm number:**

Test 3

Time: 50 minutes

1. The acceleration of a rocket fired vertically upwards t seconds after launch is $20 + 4t\ m/s^2$. Use the fact that at $t = 0$ the rocket was on the ground and not moving to find how high was the rocket after 10 seconds.

2. A bacteria culture starts with 500 bacteria and grows at a rate proportional to its size. After 3 hours there are 8,000 bacteria. Find the number of bacteria after 4 hours.

3. Sketch the slope field for the equation $y' = y + t$.

4. If $y' = \frac{4}{5}y(1 - \frac{y}{10})$, and $y(0) = 5$, find $y(1)$.