1. Let $u = x + 1$, then $u' = 1$.
Let $v = 9x + 10$, then $v' = 9$.
Quotient rule: $y' = \dfrac{u'v - uv'}{v^2}$, so

$$y' = \frac{1 \times (9x + 10) - (x + 1) \times 9}{(9x + 10)^2} = \frac{9x + 10 - 9x - 9}{(9x + 10)^2} = \frac{1}{(9x + 10)^2}.$$

Hence $y' = \dfrac{1}{(9x + 10)^2}$.

2. Let $u = -9r - 4$, then $u' = -9$.
Let $v = -5r - 9$, then $v' = -5$.
Quotient rule: $y' = \dfrac{u'v - uv'}{v^2}$, so

$$y' = \frac{-9 \times (-5r - 9) - (-9r - 4) \times (-5)}{(-5r - 9)^2} = \frac{45r + 81 - 45r - 20}{(-5r - 9)^2} = \frac{61}{(-5r - 9)^2}.$$

Hence $y' = \dfrac{61}{(-5r - 9)^2}$.

3. Let $u = 5z - 9$, then $u' = 5$.
Let $v = 6 - 7z$, then $v' = -7$.
Quotient rule: $y' = \dfrac{u'v - uv'}{v^2}$, so

$$y' = \frac{5 \times (6 - 7z) - (5z - 9) \times (-7)}{(6 - 7z)^2} = \frac{30 - 35z + 35z - 63}{(6 - 7z)^2} = -\frac{33}{(6 - 7z)^2}.$$

Hence $y' = -\dfrac{33}{(6 - 7z)^2}$.