4. For each function:

i) $f(x) = 2(5^x) - 6$

ii) $f(x) = 5\left(\frac{1}{2}\right)^x + 3$

iii) $y = -\left(2^{3x-12}\right) + 5$

iv) $y = 2(3)^{x+1} - 4$

v) $y = 2\log_6(6x)$

vi) $y = -\log_2(x-3) + 4$

vii) $y = 2\log_3(x-1) + 4$

viii) $y = -\log_{0.5}(2x-8) - 1$

a) determine the equation of the horizontal/vertical asymptote.
b) determine the intercepts (exact values only).
c) state if the function is increasing or decreasing.
d) state the domain and range.
e) state the transformations in words, and write the corresponding transformation mapping notation.
f) graph the function.

ANSWERS:

4. i) a) $y = -6$ b) -4 c) increasing d) $\{x \in R\}, \{y \in R \mid y > -6\}$ e) vertical stretch by a factor of 2, vertical translation down 6 units, $T:(x, y) \to (x, 2y-6)$

ii) a) $y = 3$ b) 8 c) decreasing d) $\{x \in R\}, \{y \in R \mid y > 3\}$ e) vertical stretch by a factor of 5, vertical translation up 3 units, $T:(x, y) \to (x, 5y+3)$