The Hyperbola & Exponential Graph (Grade 10)

MEMORANDUM

Name: ..... Class: .....

Date: .....

MARK ____ / 14

Answer all questions. Show all your working — marks are awarded for method as well as the final answer. **Teacher copy: accept any correct equivalent method.**

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1 What are the asymptotes of $y = \frac{6}{x}$? (2)

> **$x = 0$ and $y = 0$** ✓✓ (2)

2 What are the asymptotes of $y = \frac{4}{x} - 3$? (2)

> **$x = 0$ and $y = -3$** ✓✓ (2)

3 In which quadrants does $y = \frac{6}{x}$ lie? (1)

> **1 and 3** (since $a > 0$) ✓ (1)

4 In which quadrants does $y = \frac{-5}{x}$ lie? (1)

> **2 and 4** (since $a < 0$) ✓ (1)

5 Why does a hyperbola have no y-intercept? (2)

> x cannot be 0 — you cannot **divide by zero**. ✓✓ (2)

6 Find y when $x = 3$ for $y = \frac{6}{x}$. (1)

> **$y = 2$** ✓ (1)

7 What is the y-intercept of $y = 2^x$? (1)

> **(0 ; 1)** ✓ (1)

8 What is the asymptote of $y = 2^x + 5$? (1)

> **$y = 5$** ✓ (1)

9 Find the y-intercept of $y = 3 \cdot 2^x - 4$. **(2)**

> $y = 3(1) - 4 = -1$, so the intercept is **$(0\,;\,-1)$** ✓✓ (2)

10 Does $y = (½)^x$ increase or decrease? **(1)**

> **Decreases** — the base is between 0 and 1. ✓ (1)

TOTAL: 14 marks

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