QUIZ PAGE 4 Non-Calculator Years 10-13

(Some questions may be accessible to Years 7-9, with hints)

1. If $\frac{98}{19} = e + \frac{1}{f + \frac{1}{g}}$ where *e*, *f* and *g* are all integers, then the value of $e + f + g =$ A. 19 B. 14 C. 27 D. 17 E. 15

2. $4^{n+1} + 4^{n+2} =$

A. 4^{2n+3} B. 8^{2n+3} C. $2 \times 4^{2n+3}$ D. 20×4^{2n} $E. 5 \times 2^{2n+2}$

3. Find the value of $(0.4096)^{\frac{3}{4}}$.

4. Simplify $\frac{ba^2 - b^3}{ba - b^2} - \frac{a^4 - ab^3}{a^3 - ab^2}$

5. Simplify $\sqrt{[(a^2 + b^2)^2 - (a^2 - b^2)^2]}$

6. Find the value of $3^8 - 1$

7. If $a = 1 + 2^n$ *and* $b = 1 + 2^{-n}$, *then* $b =$

A. $\frac{a-2}{a+1}$ **B.** $\frac{a}{a-1}$ C. 3 D. $\frac{a+1}{a-1}$ E. $\frac{a+2}{a+1}$

8. Find the value of $\frac{9^{12} + 27^8 + 81^6}{3^{25}}$

9. What is the unit digit of the answer to:

$(5^{2006} + 1)(5^{2007} + 1)(5^{2008} + 1)(5^{2009} + 1)(5^{2010} + 1)(5^{2011} + 1)(5^{2012} + 1)$

10. What is the answer to:

$$\frac{1}{1\times2} + \frac{1}{2\times3} + \frac{1}{3\times4} + \frac{1}{4\times5} + \cdots + \frac{1}{2010\times2011} + \frac{1}{2011\times2012}$$