Quiz: Practice Regents problems #1

1. Algebraically solve for x: $5 = \sqrt{2x+3}$

$$25 = 2\pi + 3$$

 $2\pi = 22$
 $\pi = 11$
 $5 = \sqrt{2(1) + 3}$
 $5 = \sqrt{25}$
 $X = 11$

2. Solve the equation $x = 5 + \sqrt{3x - 11}$ algebraically.

$$\chi-5 = (3x-1)$$

$$(\chi-5)^{2} = 3x-1$$

$$\chi^{2}-10x+25 = 3x-1$$

$$\chi^{2}-13x+36 = 0$$

$$(\chi-4)(\chi-9) = 0$$

$$(\chi-4)(\chi-9) = 0$$

$$(\chi+3) = 5+(3(4)-1) = 0$$

$$(\chi+5) = 5+\sqrt{3}(9)+1 = 0$$

3. Given x > 0, simplify the expression $3x^{\frac{1}{2}}x^{\frac{3}{2}}$.

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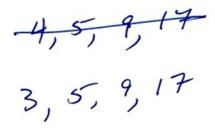
4. Given a > 0, solve the equation $2a^{2x} = \sqrt[3]{8a}$ for x.

$$2a^{2x} = 2a^{\frac{1}{3}}$$

$$2x = \frac{1}{3}$$

$$x = \frac{1}{6}$$

5. A sequence is defined recursively by $a_1 = 3$ and $a_{n+1} = 2a_n - 1$ for $n \ge 1$. Find the first four terms of the sequence.



6. A geometric sequence has a first term of $a_1 = 8$ and a common ratio of $r = \frac{1}{2}$. Write the recursive formula for the sequence.

$$q_{1} = 8$$
 $q_{n+1} = \frac{1}{2} a_{n}$

7. Write the expression s-t in the form a+bi with a,b real numbers, given s=-7-4i and t=2-3i.

$$5-t = -7-4i - (2-3i)$$

$$= -9-1i$$

8. Given that x is real number, simplify the expression xi(3+2i) and write it in simplest a+bi form with a,b real numbers.

$$= 3xi + 2xi^2$$

$$= -2x + 3xi$$