1. Rewrite each expression with base of 2.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a) 4 | b) 32 | c) 1 | d) ½  | e) 1/8  |

2. Rewrite each expression with base of 3.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a) 9 | b) 243 | c) 1 | d) 1/9 | e) 1/27 |

3. Rewrite each expression with base of 5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a) 5 | b) 25 | c) 1 | d) 1/125 | e) 1/625 |

4. Solve each equation:

|  |  |  |  |
| --- | --- | --- | --- |
| x – 8 = 10 | 5x + 1 = 11 | 22 – 4x = 10 + 2x | 3(x – 5) = 2x |

5. Express the right side of the equation as a power of 3, then solve the equation. (Changing to a common base method)

|  |  |  |  |
| --- | --- | --- | --- |
| a) 3x = 27 | b) 3x = 1/27 | c) 35x = 243 | d) 32x + 2 = 81 |

6. Solve each equation by changing to a common base.

|  |  |  |  |
| --- | --- | --- | --- |
| a) 2x = 16 | b) 6x – 1 = 36 | c) 101 – 2x = 100 | d) 42x = 64 |
| e) 4x – 3 = 1 | f) 2x – 4 = 28 | g) 8x = 43 | h) 52n+1 = 1/125 |
| i) 32(x+2) = 27 (x + 2) | j) 100(2x – 3) = 1000(3x + 1)  | k) 52(x – 5) =125(x – 1)  | l) 43(x + 1)  = 16(x + 2) |

7. A strain of bacteria doubles every hour. A lab technician starts with 200 bacteria. They use the equation B = 200(2)t to model the number of bacteria, *B,* after *t* hours.

a) Write an exponential equation that can be used to determine when there are 6400 bacteria in the culture.

b) Solve the equation you set up in section (a).