MAC1140 SEC29 HW 11-19-2007 11.4

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Due: 11-26-2007

Full Name: Sec#: Extra Credit Attempted?

1.

[11.4.1aPT]Find a_2 and a_3 such that $2 + a_2 + a_3 + \cdots + a_n = 3^n - 1$ for all n.

○ $a_2 = 6, a_3 = 18$

○ None of these

○ $a_2 = 8, a_3 = 26$

○ $a_2 = 8, a_3 = 14$

2.

[11.4.2aPT]To prove by induction that $9 + 7 + 5 + \cdots + (11 - 2n) = 10n - n^2$ is true for all positive integers n, we assume $9 + 7 + 5 + \cdots + (11 - 2k) = 10k - k^2$ is true for some positive integer k, and show that $9 + 7 + 5 + \cdots + (11 - 2k) + A = 10(k + 1) - (k + 1)^2$ where A is

○ $9 - 2k$
○ $13 - 2k$
○ $10 - 2k$
○ None of these
○ $12 - 2k$

3.

[11.4.2bPT]To prove by induction that $10 + 7 + 4 + \cdots + (13 - 3n) = \frac{1}{2}(23n - 3n^2)$ is true for all positive integers n, we assume $10 + 7 + 4 + \cdots + (13 - 3k) = \frac{1}{2}(23k - 3k^2)$ is true for some positive integer k, and show that $10 + 7 + 4 + \cdots + (13 - 3k) + (13 - 3(k + 1)) = A$ where A is

○ $\frac{1}{2}(23(k + 1) - 3(k + 1)^2) + 1$

○ $\frac{1}{2}(23(k + 1) - 3(k + 1)^2)$

○ $\frac{1}{2}((23k + 1) - (3k^2 + 1))$

○ $\frac{1}{2}(23(k + 1) - (3k + 1)^2)$

○ $\frac{1}{2}(23k - 3k^2) + 1$

4.

[11.4.3aPT]To prove by induction that $n^2 - 3n - 2$ is divisible by 2 is true for all positive integers n, we assume $k^2 - 3k - 2$ is divisible by 2 is true for some positive integer k, and we show that A is divisible by 2, where A is

○ $(k+1)^2 - 3(k+1) - 2$

○ $(k^2+1) - (3k+1) - 2$

○ $(k+1)^2 - 3(k+1) - 2 + 1$

○ $k^2 - 3k - 2 + 1$

○ None of these

5.

[11.4.3bPT]To prove by induction that $n^2 - 7n - 4$ is divisible by 2 is true for all positive integers n, we assume $k^2 - 7k - 4$ is divisible by 2 is true for some positive integer k and we show that $k^2 - 7k - 4 + A$ is divisible by 2, where A is

○ $2(k+3)$

○ $2(k-3)$

○ $2(k-1)$

○ $2(k-2)$

○ None of these