

No justifications are required for these problems. Answers will be graded on correctness.

Problem 1.

Problem 1's prompt goes here

Solution

(a) $p(x) = x^2 + 2$

(a) in $\mathbb{F}_2[x]$: Some Result.

(b) in $\mathbb{F}_3[x]$: Some other thing I want to type.

(c) in $\mathbb{F}_5[x]$:

(b) $p(x) = x^3 + x^2 + 2$

(a) in $\mathbb{F}_3[x]$: Something else goes here

(c) $p(x) = x^4 + 1$

(a) in $\mathbb{F}_2[x]$: More words

It's possible for you to force a new page if you want. I generally do this for style reasons:

Solve the following problems. Justify all answers with rigorous, clear arguments.

Problem 2. You can name the problems

Regardless if you name the problems or not, they are automatically numbered if you use `jhw.hw.cls`

Solution

- (a) I've got some commands that I've written (you can see them defined above at the beginning of the file):

$$1 \equiv 3 \pmod{2}$$

- (b) I use this one for when I plug something into Mathematica to show what I typed and the result:

$$\text{Ceiling}[19.5] \rightarrow 20$$

There are two types of mathmodes. You can have inline math mode where you're talking about the math in context. For example, let $y = x^2$ then we can show $x \in \mathbb{Z} \implies y \in \mathbb{Z}$. Sometimes you want to dedicate a whole line to some statement. For example, we can show that

$$\sum_{i=1}^n (i) = \frac{n(n+1)}{2}$$

Sometimes you have some math statement that takes a bunch of lines. You can use the `align*` environment for that. Remember that you have to end each line with a double slash and you have to put an ampersand before whatever you want to align on (for example, the equals signs).

Claim. $x^2 - 1 = (x - 1)(x + 1)$

Proof.

$$\begin{aligned} x^2 - 1 &= x^2 + 0x - 1 \\ &= x^2 - x + x - 1 && (0 = -1 + 1) \\ &= x(x - 1) + 1(x - 1) && (\text{factor each pair}) \\ &= (x + 1)(x - 1) && (\text{factor out } x - 1) \end{aligned}$$

□

Theres a lot more you can do, but this can get you pretty far.